Video Display Terminal Operation Manual

AMPEX 270

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AMPEX

AMPEX270

Video Display Terminal

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FOREWORD

The *Ampex 270* desktop video display terminal is an input/output peripheral capable of interfacing with a variety of computer systems and peripheral devices. The *Ampex 270* terminal has its own set of operating characteristics ("native mode"), is fully compatible with the Ampex 230 plus terminal, and emulates the following terminals:

Manufacturer	Terminal Model
ADDS	Viewpoint A1, Viewpoint A2
Ampex Corp.	270, 230 plus
TeleVideo Systems, Inc.	950, 955
Wyse Technology	WY-50, WY-50 Plus, WY-60
Lear Siegler	ADM5

HOW TO USE THIS MANUAL

This manual contains the information necessary to operate the *Ampex 270* Video Display Terminal.

The manual describes how the *Ampex 270* terminal works in its native mode. Although it is likely that an action's effect (e.g., INSERT CHARACTER) is the same when emulating another terminal, differences are possible. Consult the manual for the terminal being emulated if the effect is not as expected. NOTE: The effect of an action available in an emulation but not in the native mode is not described in this manual.

Sections are summarized as follows:

FOREWORD Provides general information about the *Ampex 270* video display terminal, including a physical description and overview of features.

SECTION I Explains how to physically install the terminal.

SECTION II Describes how to customize the terminal's settings for operation.

SECTION III Explains how to operate the terminal, including how to choose the proper communications mode, different ways of displaying data, how to enter and edit data, how to use function keys, sending and printing text, and how to re-program the programmable keys.

SECTION IV Describes how to choose an emulation and notable operational differences between the *Ampex 270* native characteristics and the emulation's characteristics.

SECTION V Provides a brief troubleshooting guide.

APPENDICES Provide specifications, optional equipment installation (including national keyboard character sets), all escape and control sequences for both the *Ampex 270* and emulations, codes for cursor addresses, ASCII characters, and monitor mode symbols.

Conventions Used in this Manual

Certain conventions are used in this manual to describe commonly occurring descriptions. Examples of each convention are given below:

If the manual says, "press"	it means
SHIFT/S	simultaneously press the SHIFT key and "s" key.
CTRL/S	simultaneously press the CTRL key and the "s" key. Do not press SHIFT to get a capital "S".
SHIFT/Fn	simultaneously press the SHIFT key and any function key.
SHIFT/alphabet key	simultaneously press the SHIFT key and any alphabet key.
SHIFT/NO SCROLL	simultaneously press the SHIFT key and NO SCROLL key.
SHIFT/NO SCROLL = SETUP	a reminder that some keys are marked to suggest the effect of pressing the key with and without simultaneously pressing the SHIFT keys. In this case, NO SCROLL is the effect if SHIFT is not pressed; SETUP is the effect if SHIFT is pressed at the same time.

If the manual says, "enter..." or "enter the sequence ..."	it means
ESC v	first press the ESC key, then press the "v" key. Note: do not press the "spacebar". Spaces have been inserted between characters for clarity.
ESC V p1	first press the ESC key, then press SHIFT/V, then press the particular key represented by "p1". A table will list the possible choices and associated values of "p1".
ESC = 1	first press the ESC key, then the "=" key, then the "1" key. Do not press the spacebar.
ESC space k	first press the ESC key, then the spacebar, then the "k" key.

PHYSICAL DESCRIPTION

The *Ampex 270* consists of two major subassemblies: the keyboard and the display unit.

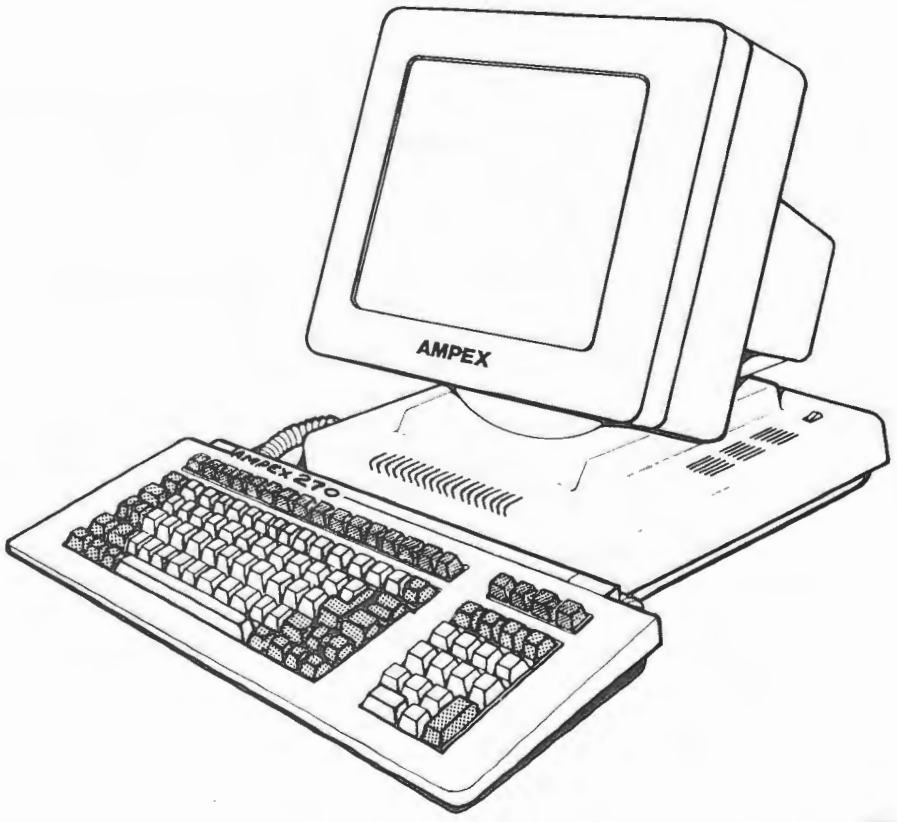
Keyboard

The keyboard is used to send information and commands to a host computer system or printer. It attaches to the display unit via a coiled cable extending to a maximum length of six feet.

The keyboard has a step-sculptured profile and adjusts to a slope of 7, 11, or 15 degrees. Keycap surfaces are a nonglare pearl white with special keys a shade of gray for ease of access. Key legends are black.

Display Unit

The display unit consists of a molded plastic case which houses the electrical and electronic circuitry necessary to display and transmit information, and a cathode ray tube (CRT) for displaying the information. The display has a 14-inch (diagonal) viewing screen. The display unit is seated on a pedestal which allows the unit to tilt and swivel.



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TERMINAL FEATURES

The table below lists and briefly describes the various features of the *Ampex 270* terminal.

Feature	Description
Character Display	Each alphanumeric or symbolic character is displayed on the screen in an 8 x 14 dot matrix within a 10 x 16 dot field with 3 dot descenders in 80 x 26 screen format. Characters may also be displayed as double-high and/or double-wide.
Character Graphics	Special block or line graphics characters may be displayed.
Character Set	The *Ampex 270* supports the following national character sets: Denmark France Germany Italy Norway Spain Sweden United Kingdom United States
CRT Saver	After a selected period (10, 20 or 30 minutes), if no information is sent to the terminal by either the operator or host computer, all information disappears from the viewing screen. Information reappears as soon as a key is pressed or a prompt is received from the host computer.
Cursor	The current character position is designated by a block or underline cursor which is addressable (i.e., may be positioned anywhere on the screen/page) and readable (i.e., its row, column, and page location may be requested).
Display Format	The viewing screen is twenty-four lines by 80 or 132 characters. A programmable user line on the last row and a status line on the first row of the screen may also be displayed.
Function Keys	16 function keys (pressed singly or in conjunction with SHIFT) are available for sending code sequences to the screen and/or host computer. Forms or command sequences may be defined by the operator and stored in a 1K-byte nonvolatile memory.
Keyclick	If desired, an electronically-generated audible click will sound whenever a character key is pressed.

Operating Modes

The terminal may be operated in a variety of "modes", which may be selected from the computer or via the keyboard. The available modes include:

Mode	Description
Block	Stores a block of data entered from the keyboard in the terminal display memory. Data may then be edited "on-screen" -- before being transmitted to the host.
Conversation	Transmits data to the host computer as it is entered from the keyboard on a character-by-character basis.
Local	Executes terminal functions locally -- transmission between the terminal and the host computer is prohibited.
Monitor	Control characters entered via the keyboard or received from the host are displayed on screen but not interpreted or executed.
Protect(Text)	Protects text entered in Write Protect mode from erasure, change, or transmission to computer or printer. Used, for example, in data entry on electronic forms.
Write Protect(ed Text)	Entered text is marked so that it will be protected when terminal is in Protect mode.

Page Memory

The terminal can store 96 lines of data in its own memory, divisible into units of one page (96 lines), two pages (48 lines per page), or four pages (24 lines per page).

Printing

A printer can be attached directly to the terminal via the terminal's Auxiliary port. Printing may be controlled in a variety of ways :

Copy Print	Prints data sent to the terminal by the host while displaying it on the screen.
Page Print	Printing initiated via the keyboard or from the host; prints the text from the Home position through cursor position; printing may be either formatted or unformatted.
Transparent Print	Printing completely controlled by the computer: printing cannot be initiated from the terminal; printed data is not displayed on the terminal screen.

Bidirectional Print	Allows printer to send data to host during printing.
Scrolling	A variety of scrolling options may be set, including:
Extended Page	A 48-line or 96-line page may be scrolled without loss of data.
Flip Mode	Data exceeding the last line of a page may continue to scroll on the same page or "flip" to a new page.
Scroll Rate	Data may be scrolled at any of seven smooth rates or at a jump scroll rate.
Scroll Region	Any block of adjacent rows may be defined as the scrolling region; or any set of individual rows or block of adjacent rows may be "locked" while data on the remaining lines scroll.
Set-up	Terminal operation is customized using menu-driven Set-Up screens, accessed via the SET-UP key. Set-up screens display current values of terminal's operating parameters. Parameter values may be changed and saved.
Video Attributes	Video attributes can be assigned from either the terminal keyboard or the host computer. Video attributes may be either embedded (assigned to a field) or non-embedded (character-specific). Attributes can be assigned singly or in combination.

Blank (i.e., "invisible": characters not displayed)
Flash
Reverse
Underline
Half-Intensity (Dim)
Full-Intensity

SECTION I
INSTALLATION

INTRODUCTION

The *Ampex 270* Video Display Terminal may be operated in a wide variety of physical environments. This section explains how to physically install the *Ampex 270* terminal. It is divided into two main sections: the display unit, the keyboard.

1.1 INSTALLATION REQUIREMENTS

The *Ampex 270* terminal is designed to be placed on a flat, hard surface capable of supporting at least 22 pounds (10 kg) and at least 21.5 inches square (540 mm square) (see Figure 1-1). The terminal should be operated in an ambient room temperature ranging from 32° F to 104° F (0° C to 40° C).

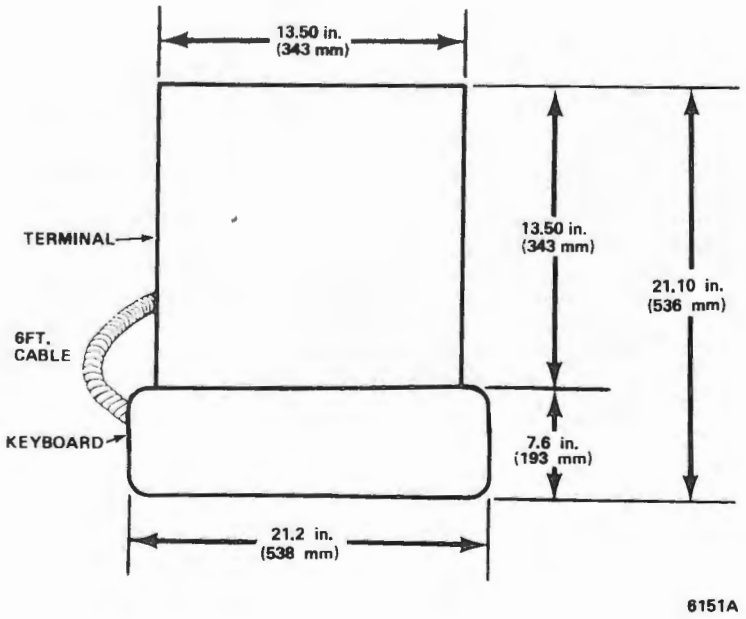

Figure 1-1. Terminal Dimensions

CAUTION

Do not block any of the air vents on the unit (see Figure 1-2). All air vents on the terminal must be kept clear for the unit to cool properly during operation.

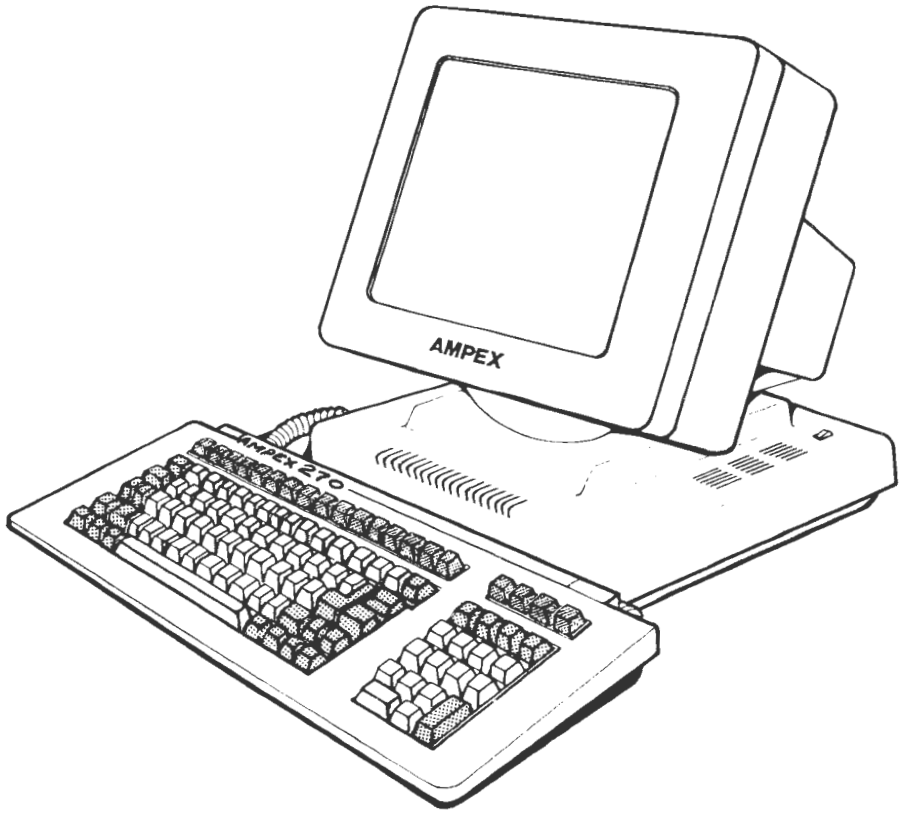

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Figure 1-2. Terminal, Front View

1.1.1 AC Power Cord and Plug

The *Ampex 270* terminal is equipped with either a 115 VAC 60 Hz power plug (for use in the United States) or a 230 VAC/50 Hz power plug (for use outside the United States). Make sure that the cord and plug are appropriate for the power output you intend to use (Figure 1-3).

NOTE

If you will be using the terminal in either the United Kingdom or Australia, you may need to customize the power plug in order to fit the receptacle.

WARNING

Before changing the plug, disconnect the cord from the wall outlet (AC power). Electric shock may result if the power cord is connected to AC power when the plug is cut from the cord.

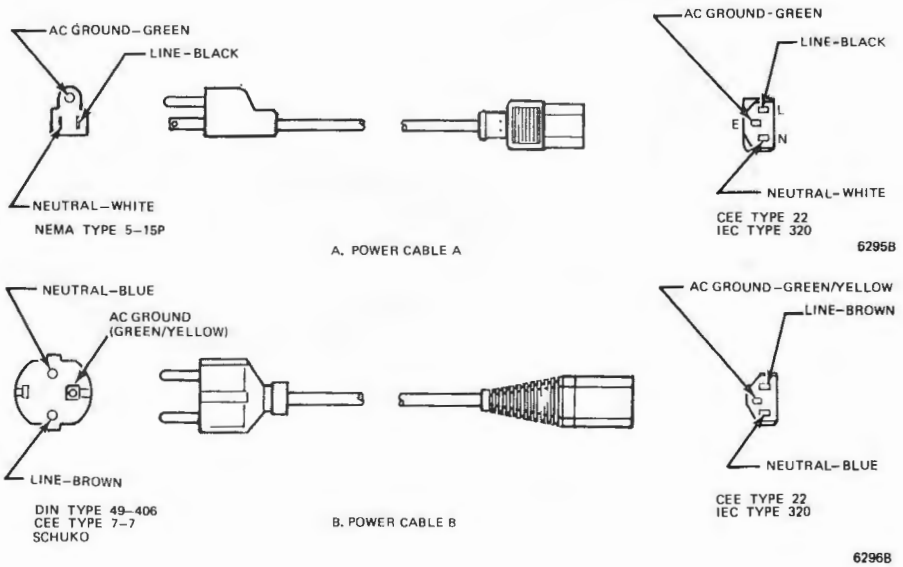


Figure 1-3. Power Cord/Plug Types

1.2 INSTALLING THE DISPLAY UNIT

The Display unit consists of a Cathode Ray Tube (CRT) mounted on a pedestal (Figure 1-2). The Display tilts and swivels for the most comfortable viewing angle.

The pedestal holds the ON/OFF switch for the terminal, two "ports" for attaching the unit to other equipment, and a "port" for connecting the keyboard to the display unit (see Figure 1-4).

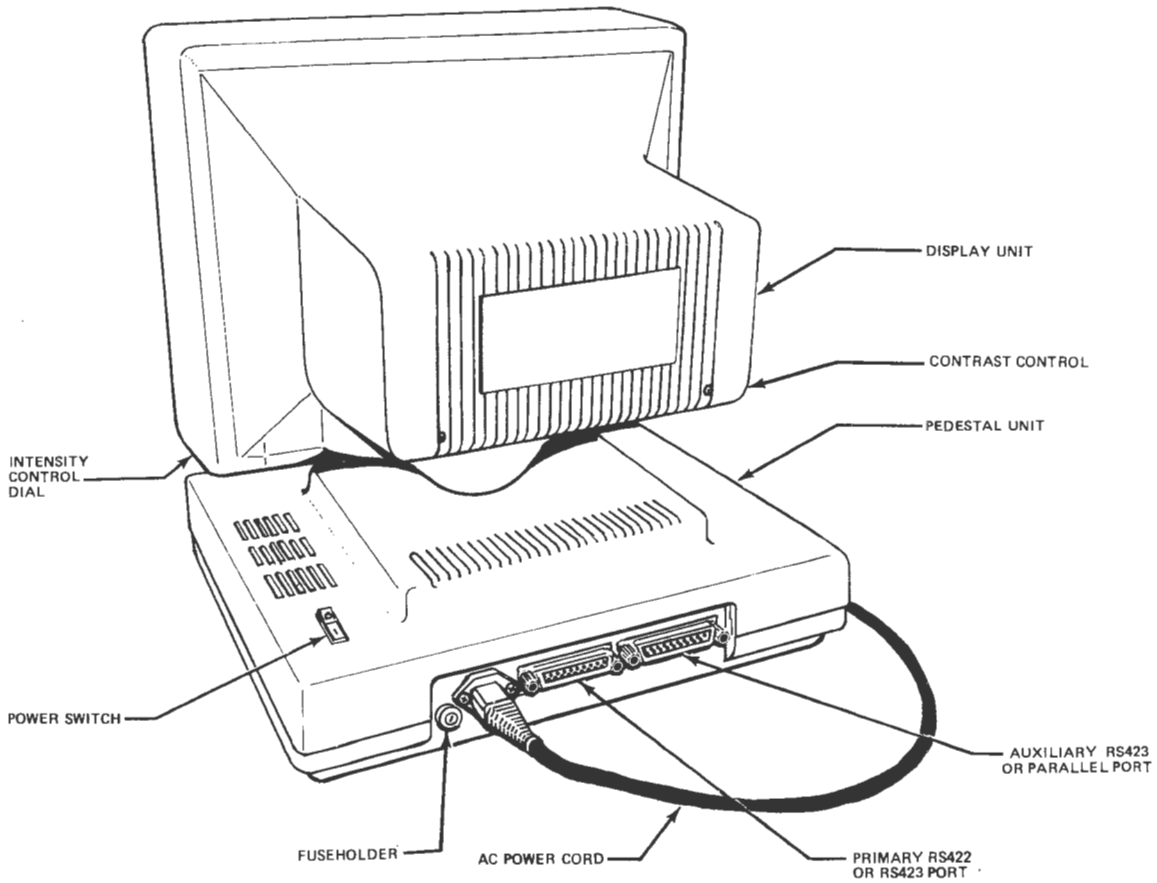


Figure 1-4. *Ampex 270* Terminal, Rear View

1.2.1 The Display Screen

The Display Screen (Figure 1-5) is where characters you type or characters received from the host computer appear. The Status Line reports the status of the terminals. The User Line provides space for operator or application program entries. Twenty six or 44 rows may be displayed, configured as follows:

Row	Contents
Top	Status Line or User Line
Middle 24 or 42 rows (as selected)	Typed or received data
Bottom	Status Line, User Line or Data Line

Underneath the lower right side of the CRT is a brightness control (see Figure 1-4).

A CRT Saver built into the terminal turns off the display after about 10, 20, or 30 minutes as selected; if no new characters are sent to the screen.

NOTE

You can turn off the CRT Saver by selecting Screen Saver Timeout = Off in the Display Setup screen If you turn off the CRT Saver, be sure not to leave screen intensity at a high level for long periods of time. Doing so may wear the phosphor-coated screen unnecessarily.

This, and other options affecting the display screen, depend on choices you make in the set-up mode.

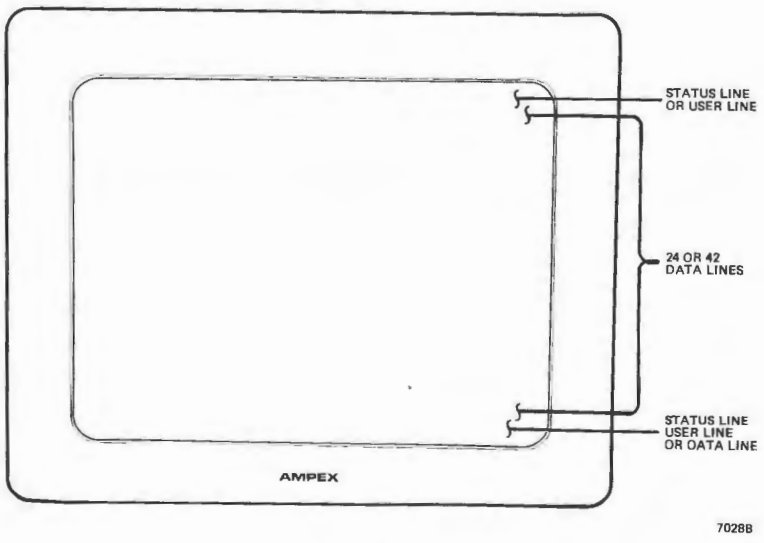


Figure 1-5. *Ampex 270* Terminal, Display Areas

1.2.1.1 Status Line

The Status Line (top of the screen) reports on the communication mode, time of day, DSR status, and cursor position. See Figure 1-6 for a complete listing of possible status entries.

NOTE

You can turn off the Status Line in Status Line Setup/Submenu Selection screen (Top Row Off).

NOTE

The contents of the Status Line may be sent to the computer (see SENDING in Section III).

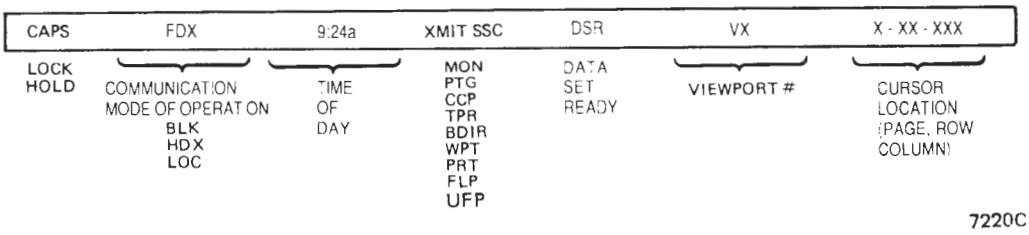


Figure 1-6. Terminal Status Line

1.2.1.2 User Line

The User Line (located at either bottom or top of screen, as selected) is one of two optional "free" lines reserved for operator or application program entries. The length of each User Line depends upon the line length chosen in Edit User Lines setup submenu: 80 or 132 columns.

Ordinarily, the User Line is not displayed.

To turn the User Line ON,
enter the sequence **ESC g**

To turn the User Line OFF,
enter the sequence **ESC h**

To enter data onto the User Line,

1. Enter the sequence **ESC f**
2. Type in the desired message.
3. Press RETURN (to signal the end of the message).

The contents of the User Line may be sent to the computer (see "SENDING" in Section III).

1.2.2 Interface Cable Connections

There are two serial ports, Primary port and Auxiliary port (i.e., secondary port). The Primary port is always configured as a data terminal (DTE). The Auxiliary port can be configured as a DTE port or as a data communication port (DCE) with hardwired jumpers; DCE is selected as factory default setting. With a connector adaptor installed, the Auxiliary port functions as a parallel printer port.

1.2.2.1 Primary Port

The Primary port supports both RS423 and RS422 signal levels. Pin functions are as follows.

Table 1-1. Primary Port Pin Connections

RS423 Pin Connections

Pin 1 - Chassis ground
Pin 2 - TxD transmit data (from terminal)
Pin 3 - RxD receive data (to terminal)
Pin 4 - RTS request to send (from terminal)
Pin 5 - CTS clear to send (to terminal)
Pin 6 - DSR data set ready (to terminal)
Pin 7 - Logic ground
Pin 8 - DCD data carrier detect (to terminal)
Pin 20 - DTR data terminal ready (from terminal)

Table 1-1 Primary Port Pin Connections (Continued)

RS422 Connections

Pin 1 - Chassis ground
Pin 15 - RxD+ receive data positive (to terminal)
Pin 17 - RxD– receive data negative (to terminal)
Pin 19 - TxD+ transmit data positive (from terminal)
Pin 25 - TxD– transmit data negative (from terminal)

1.2.2.2 Auxiliary Port

The Auxiliary port can be configured as a DTE port, DCE port, or a printer port.

Table 1-2. Auxiliary Port Pin Connections

RS423 Connections (Selected as DTE Port)

Pin 1 - Chassis ground
Pin 2 - TxD transmit data (from terminal)
Pin 3 - RxD receive data (to terminal)
Pin 4 - RTS request to send (from terminal)
Pin 5 - CTS clear to send (to terminal)
Pin 6 - DSR data set ready (to terminal)
Pin 7 - Logic ground
Pin 8 - DCD data carrier detect (to terminal)
Pin 20 - DTR data terminal ready (from terminal)

RS423 Connections (Selected as DCE Port)

Pin 1 - Chassis ground
Pin 2 - TxD transmit data (to terminal)
Pin 3 - RxD receive data (from terminal)
Pin 4 - RTS request to send (to terminal)
Pin 5 - CTS clear to send (from terminal)
Pin 6 - DSR data set ready (from terminal)
Pin 7 - Logic ground
Pin 8 - DCD data carrier detect (from terminal)
Pin 20 - DTR data terminal ready (to terminal)

The Auxiliary port can be configured as parallel printer port capable of supporting the IBM-PC compatible parallel printer. Pin functions are as follows:

Pin 9 - D7 Data bus bit 7
Pin 10 - D5 Data bus bit 5
Pin 11 - D3 Data bus bit 3
Pin 12 - D1 Data bus bit 1
Pin 13 - /STROBE Printer in read state (from terminal)
Pin 14 - /INIT Reset printer (from terminal)
Pin 15 - /ERROR Printer in paper end, off line, or error state (to terminal)
Pin 16 - /AUTOFEED Feed one line after printing (from terminal)
Pin 17 - SELECT Printer in selected state (to terminal)
Pin 18 - P.END Printer in paper out state (to terminal)
Pin 19 - BUSY Printer in busy state (to terminal)
Pin 21 - /ACKNLG Printer in ready state (to terminal)
Pin 22 - D6 Data bus bit 6
Pin 23 - D4 Data bus bit 4
Pin 24 - D2 Data bus bit 2
Pin 25 - D0 Data bus bit 0

The parallel port connector adaptor that is used to convert the nonstandard pin-out of the secondary port to standard pin-out of the IBM-PC compatible printer is as follows:

Signal Name	Female Side of Adapter (To IBM Compatible Printer)	Male Side of Adapter (To Secondary Port of Terminal)
–Strobe	1	13
+Data Bit 0	2	25
+Data Bit 1	3	12
+Data Bit 2	4	24
+Data Bit 3	5	11
+Data Bit 4	6	23
+Data Bit 5	7	10
+Data Bit 6	8	22
+Data Bit 7	9	9
–Acknowledge	10	21
+Busy	11	19
+P.End	12	18
+Select	13	17
–Auto Feed	14	16
–Error	15	15
–Init Printer	16	14
Ground	17–25	7

NOTE

A host can be connected to either the Primary or the Auxiliary port. However, the terminal can receive data from only one port at any time. The port is configured in the set-up mode. No two hosts can communicate simultaneously.

NOTE

When one of the serial ports is configured as a host port, the other serial port can also be optionally configured as the output port using the Transparent Print mode setup.

1.2.3 Keyboard Port Connection

The keyboard port, a phone-type connection, for the *Ampex 270* terminal is located on the left side of the display unit (Figure 1-7). The keyboard connects to the terminal by attaching the keyboard cable to this port. Insertion is "keyed", i.e., there is only one way to insert the cable into the opening.

CAUTION

DO NOT connect or disconnect the keyboard to or from the display unit when the power is on. Erratic performance may result.

DO NOT attempt to connect another manufacturer's keyboard or a keyboard from another Ampex terminal model to the *Ampex 270* display unit.

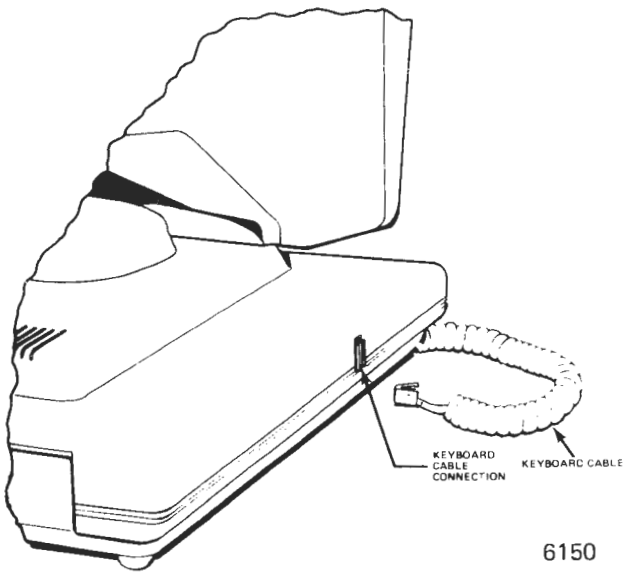


Figure 1-7. Keyboard Port on Display Terminal

1.3 ON/OFF Switch

The ON/OFF (power) switch is a rocker-type switch located to the right rear of the unit.

1.3.1 Power On Procedures

When you turn on the terminal, it performs a self-test to make sure it is working properly.

This self-test operation checks the following areas/functions:

CMOS RAM (a check sum of the terminal's set-up information)
DATA RAM
DISPLAY RAM
CHARACTER RAM
VISUAL ATTRIBUTES (displays the test pattern*)
KEYBOARD

NOTE: the results of the self-test do not depend on whether or not the terminal is connected to a computer and/or printer; i.e., you can check the terminal is working properly without first connecting it in your system.

To turn on the terminal:

1. Plug the power cord into the proper outlet or receptacle.

   Make sure all interface cables are connected properly.

2. Set the on/off switch to ON (rear "swing" down).

IF THE SELF-TEST FINDS NO PROBLEMS,

the cursor will appear in the HOME position (the upper left corner of the screen). The terminal is ready for use.

IF THE SELF-TEST UNCOVERS A PROBLEM,

one of the following messages may appear:

CMOS CHECKSUM ERROR
DATA RAM ERROR
KEYBOARD ERROR
DOWN-LOAD CHARACTER RAM ERROR
DISPLAY RAM ERROR

---

* The test pattern shows all character sets and the different video attributes of characters. Ordinarily, the test pattern is not displayed during the power-on self-test. NOTE: The version number of the terminal's firmware is displayed in Setup.

If you get CMOS CHECKSUM ERROR, do the following:

press SHIFT/NO SCROLL (= SETUP)
press SHIFT/D
press SHIFT/NO SCROLL (= SETUP)
press SHIFT/S.
turn the terminal off and then back on.

If the message does not appear, you are ready to proceed.
If the message reappears, contact your service representative.

If you get one of the other messages, do the following:

press CTRL/SHIFT/RESET

If the message does not appear, you are ready to proceed.
If the message reappears, contact your service representative.

1.3.2 Resetting the Terminal

Resetting the terminal returns the terminal to its state at power-on (nothing displayed, nothing in memory) and initiates a self-test; but power remains on.

To reset the terminal and clear the screen,

press CTRL/SHIFT/RESET

1.4 THE KEYBOARD

The *Ampex 270* keyboard consists of a main (typewriter) keypad, a numeric keypad, cursor keys, editing keys, and control keys.

1.4.1 Main Keypad

The main keypad contains alphabetic, numeric, symbol and special typing function keys.

1.4.1.1 Alphabet Keys: National Character Sets

The alphabetic keys are arranged in a "Selectric III-type" layout and operate much like those on a typewriter keyboard (Figure 1-8).

Figure 1-8. Character Keys

However, unlike a typewriter, the *Ampex 270* terminal can generate any of nine national character sets: Denmark, France, Germany, Italy, Norway, Spain, Sweden, United Kingdom, and United States(see Appendix B).

The keycaps on the typewriter correspond to the character set selected at the factory: United Kingdom/United States. To change to another national character set, go into General Setup.

If you wish to change to a different set of keycaps, contact Ampex about purchasing the desired set. Instructions for replacing keycaps are given in Appendix B.

1.4.1.2 Cursor Keys

The cursor keys (Figure 1-9) control the movement of the cursor. The effect of each key depends on how you have Set-Up the terminal (see Section II). The effect under the default settings (the ones set at the factory) is described briefly in Table 1-3. A more complete listing of the effects of each key are given in Section III.

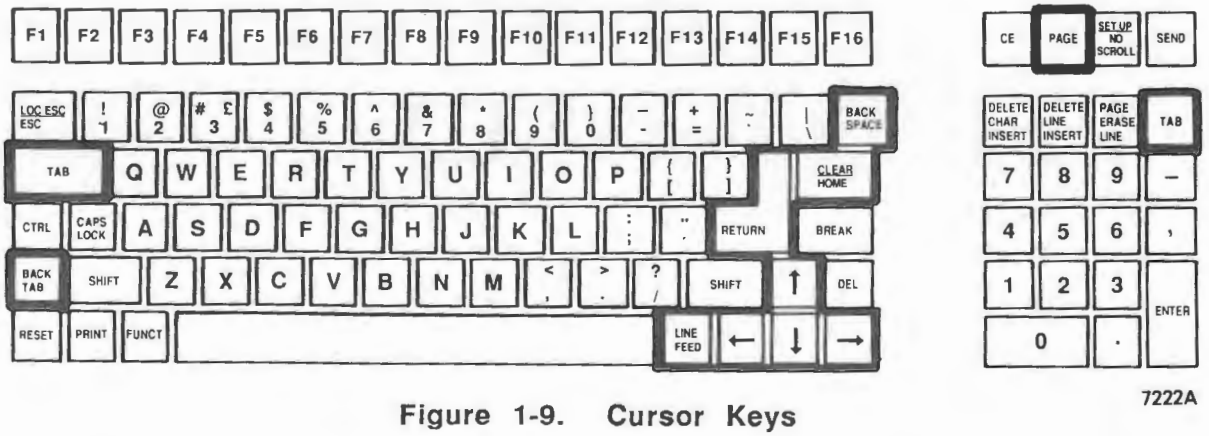


Figure 1-9. Cursor Keys

Table 1-3 Cursor Keys

Key	Effect
ARROW KEYS	Moves the cursor one position in the direction of the arrow (up, down, left, right)
BACK SPACE	Moves the cursor one column left. If cursor is in the HOME position (row 1, column 1), cursor will not move.
BACK TAB	Moves the cursor to the previous tab stop or to the first column of the line if there are no preceding tab stops.
HOME	Moves the cursor to column 1, row 1 of the current page.
LINEFEED	Moves the cursor down one line. If cursor is on last line of the page, data scrolls up one row.
PAGE	Moves the cursor to the HOME position or to its last position on the next page. SHIFT/PAGE moves the cursor to its last position on the previous page.
RETURN	Puts the cursor at the beginning of the same line (CR).
TAB	Moves the cursor to the next tab stop, if any.

1.4.1.3 Edit Keys

The Editing keys (Figure 1-10) are used to make changes to data displayed on the screen. The effect of each key depends on how you have set up the terminal (see Section II). The effect under the default settings (the ones set at the factory) is described briefly in Table 1-4. A more complete listing of the effects of each key are given in Section III.

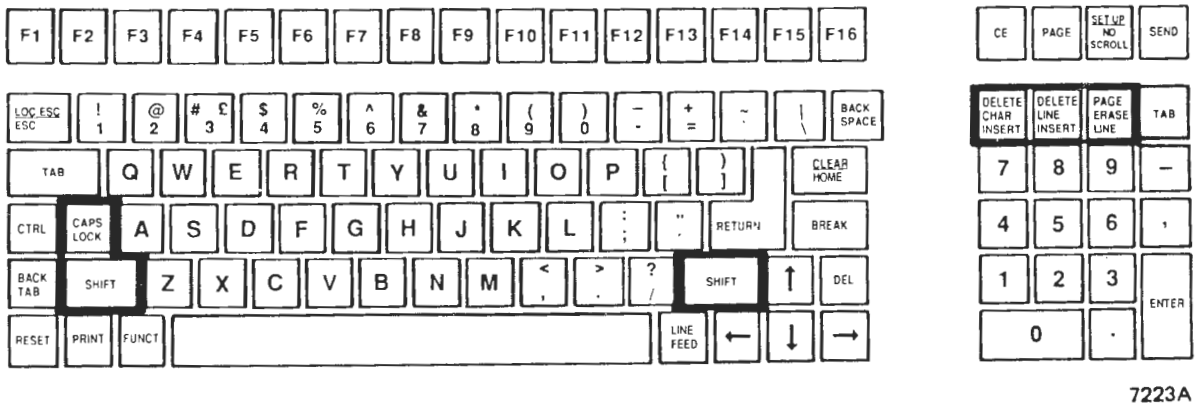


Figure 1-10. Editing Keys

Table 1-4. Edit Keys

Key	Effect
CAPS LOCK	When pressed, subsequently typed alphabetic keys are upper-case. When pressed again, typed alphabetic characters are lower-case.
CHAR DELETE/ INSERT	Inserts space at cursor position and moves following characters on the line one column right. SHIFT/CHAR deletes the character at the cursor position and moves all following characters on the line one column left.
ERASE PAGE/LINE	Replaces all characters from the cursor position to the end of the line with spaces. SHIFT/ERASE replaces all characters from the cursor position to the end of the page with spaces.
LINE DELETE/ INSERT	Inserts a line of spaces at the cursor position. All following lines move down one, eliminating the last line. SHIFT/LINE deletes the line on which the cursor is positioned, all following lines move up one.
SHIFT	While a SHIFT key is pressed, typing another key generates the upper case version of the key. If a key does not have an upper-case version, the SHIFT key is ignored. Keys affected depend on operator-selected setting.

1.4.2 Control Keys

The control keys (Figure 1-11) are used to perform special operations. The effect of each key is described briefly in Table 1-5.

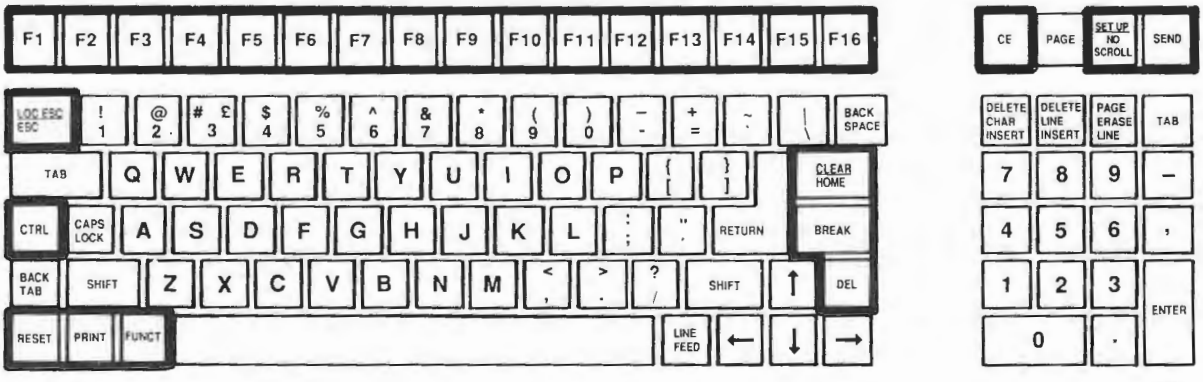


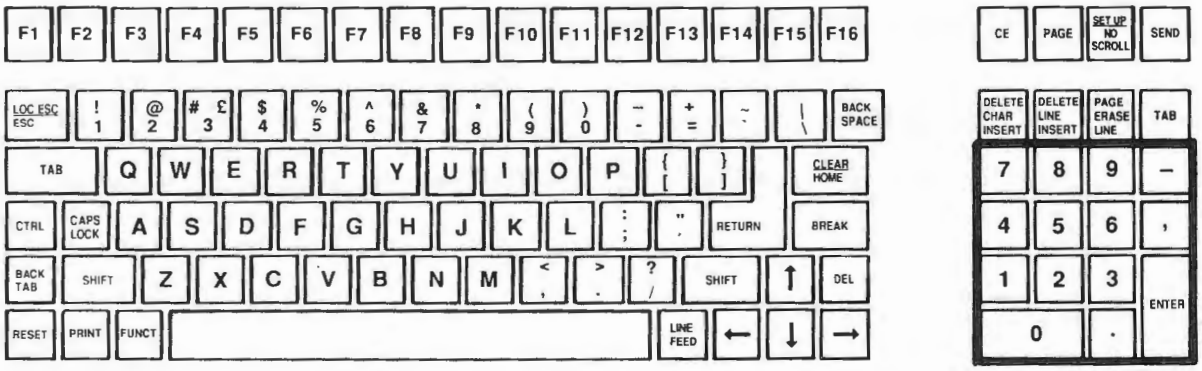
Figure 1-11. Control Keys

Table 1-5. Control Keys

Key	Effect
BREAK	CTRL/BREAK sends a (250 millisecond) break pulse (not displayed) to the host (effect of BREAK depends upon the application or host operating system).
CE	Replaces all characters in the "line segment" occupied by the cursor with spaces; moves the cursor to the first position in the segment. A line is segmented if at least one tab stop is set. A line segment is either column 1 to the first tab stop, columns from one tab stop up to the next tab stop, or the last tab stop column to the end of the line. If there are no tab stops, replaces all characters on the current line with spaces; i.e., clears the line.
CLEAR	Replaces all characters on the current page with spaces; i.e., clears the screen. SHIFT/HOME = CLEAR.
CTRL	Pressed in combination with another key to transmit particular information (depending on the application) to the computer or printer. (E.g., CTRL/S = pause scrolling)
DEL	Sends an ASCII delete code (not displayed) to the host.
ESC/ LOC ESC	Initiates via the ESC prefix a sequence which allows operator to momentarily leave a program for performing other action. SHIFT/ESC = LOC ESC leaves program but action performed is local only, i.e., not transmitted to computer or printer.
Fn	Pressing a function key or SHIFT/function-key transmits a control or escape sequence to the host. The particular effect of each sequence depends on the application. The sequence transmitted may be altered ("programmed") by the operator or the host (see Section III).
FUNCT	FUNCT/any-alphabet-or-number-key sends a three character code sequence to the host (see Section III)
NO SCROLL/ SETUP	Opens/closes terminal to transmission from host (scrolling on screen). SHIFT/NO SCROLL = SETUP enters/exits Set-Up procedures (see Section II).
PRINT	Prints (literally, sends to the printer) the characters from the HOME position through the cursor position
RESET	Resets the terminal IF pressed simultaneously with CTRL/SHIFT.
SEND	Transmits (when in Block mode) data to the host, depending on what other key(s) are pressed: If you press ... is sent to the host SEND entire page SHIFT/SEND entire line

1.4.3 Numeric Keypad

The numeric keypad (Figure 1-12) is used to enter numeric data, like the keypad of an adding machine or calculator. The ENTER key acts the same as the RETURN key.


F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 F13 F14 F15 F16
CE PAGE SET UP NO SCROLL SEND
LOC ESC ESC ! 1 @ 2 # £ 3 $ 4 % 5 ^ 6 & 7 * 8 (9) 0 _ - + = ~ ` | \ BACK SPACE
DELETE CHAR INSERT DELETE LINE INSERT PAGE ERASE LINE TAB
TAB Q W E R T Y U I O P { [}] CLEAR HOME
7 8 9 –
CTRL CAPS LOCK A S D F G H J K L : ; " ' RETURN BREAK
4 5 6 ,
BACK TAB SHIFT Z X C V B N M < , > . ? / SHIFT ↑ DEL
1 2 3 ENTER
RESET PRINT FUNCT LINE FEED ← ↓ →
0 .

7225

Figure 1-12. Numeric Keypad Group

1.5 Locking and Unlocking Keyboard

It is possible to "lock" the keyboard. If the keyboard is locked, *Lock* appears on the Status Line. Typing or pressing any key (or combination) is ignored, except for

CAPS LOCK
CTRL/SHIFT/RESET
SHIFT/NO SCROLL (= SETUP)

To lock the keyboard

- Via the keyboard, press SHIFT/NO SCROLL (=SETUP); press Right Arrow until Keyboard Setup screen appears; press Down Arrow until cursor reaches *Keyboard Unlock*; or
- enter or receive from the host the sequence **ESC #**

To unlock the keyboard -

a. Do the following:

1. Go to the Keyboard Setup (screen 5) procedures
2. Press the Down Arrow eight times to move to Keyboard Lock
3. Press the space bar to change Keyboard Lock to Keyboard Unlock. Press SHIFT/NO SCROLL to exit Set-Up

or

b. Press CTRL/SHIFT/RESET to reset the terminal to default settings (Keyboard Unlock);
or

c. Go to General Setup screen; press the Down Arrow to Set Default Values; and press ENTER,

or

Receive from the host the sequence **ESC "**

1.6 INDICATORS

The terminal has two audio indicators. Although they have been set to ON, they can be turned off in Set-up.

Indicator	Meaning
Keyclick	Sounds whenever an alphabetic (a, b, c) or numeric (1, 2, 3) character key is typed.
Bell	Sounds (a) when the terminal self-test is completed, (b) when typed characters approach the right margin (column 72 if line length = 80; column 120 if line length = 132), (c) when the terminal receives a bell control code .

SECTION II
SETTING UP

INTRODUCTION

The *Ampex 270* terminal is designed to operate in a variety of ways, attached to a variety of equipment. In order to make sure that the terminal will work properly with your particular configuration of equipment, you must first set it up; i.e., you must customize it to work with your equipment.

This section explains the options available in Setup mode, how to enter and exit Setup mode, how to change settings, and how to save the changes.

2.1 ENTERING SETUP MODE

To enter Setup mode, press SHIFT/NO SCROLL = SET UP. When you enter Setup mode, current parameter values will display.

Entering Setup signals (XOFF or DTR Low) the host to stop transmission. Exiting Setup signals (XON or DTR High) the terminal to resume transmission.

2.1.1 Setup Screens

There are five main screens of parameters for customizing operation of the terminal.The main screens are always accessed in the same sequence, with General Setup the initial screen.

General Setup (screen 1)

Display Setup (screen 2)

Status Line Setup/Submenu Selections (screen 3)

Communication Setup (screen 4)

Keyboard Setup (screen 5)

On each screen parameters are listed on the left side of the screen. In most cases selections available for the chosen parameter display in the box on the right side of the screen.

Certain parameters on the Status Line/Editing Setup screen have their own dedicated screen:

Define Answerback
Define Function Key
Edit User Lines
Define Terminator
Define Editing Key
Define Window
Set Tab

To move the cursor between selections on a Setup screen, use the appropriate arrow key:

Arrow Key*	Moves cursor to
UP	Preceding line, if any
DOWN	Following line, if any

*On some of the submenu setups, cursor selections are effected by moving the arrow keys LEFT or RIGHT.

To view another Setup screen, press the appropriate arrow key:

Arrow Key	Moves cursor to
LEFT	Preceding screen
RIGHT	Following screen

2.1.2 Modifying Parameters

Each Setup line on the left of the screen denotes a parameter which determines how the terminal will behave when you exit Setup mode. The nature of the parameter is suggested by the name and value displayed on the line; e.g., "Language = USA" means, "desired national character set is American English".

The setting visible on the line when you first enter Setup is the setting in effect. Alternative selections, where appropriate, are listed in the box to the right.

To change to a different value, press the Spacebar until the desired setting is visible on the Setup line. i.e., the value displayed will be the value put in effect when you exit Setup.

Changes to parameters are not made permanent until you save them.

Note: Certain parameters, e.g., "Define Function Key", require extensive editing. In such cases, press "Enter" to access and press "Enter" or "Home" to exit the editing "area." Note also: While editing, the Left/Right cursor keys move the cursor left/right one column.

2.1.3 Exiting and Saving Changes

Changes to parameters are not permanent until you save them to non-volatile memory. Once saved, they remain in non-volatile memory until you save new changes.

To save setting(s) as changed,

press **SHIFT/S** (simultaneously press the SHIFT and S keys) or

move the cursor to "Save Current Values" (General Setup Screen) and press the Enter key.

Either action saves the settings and causes the terminal to exit Setup Mode. These settings remain in effect until you save new ones.

The following fields revert to their default setting when you turn the terminal off and then on :

Field	Default Setting
Printer Port	Normal Print
Editing mode	Line Edit
Keyboard unlock	Unlock
Number of lines per page	24
Flip Mode	Off
Time of day	8:00a

Note: To save changes to the contents of function keys ("Define Function Key"), use the command "Save Current Function Key Values" on the "Function Key Setup" screen . Note also: Changing an emulation doesn't change the contents of functions keys.

2.1.4 Exiting with Temporary Changes

Changes to parameters may also be temporary; i.e., they remain in effect until new changes are made or until the terminal is turned off.

To leave Setup with temporary changes, press **SET-UP** (SHIFT/NO SCROLL).

The values in non-volatile memory are not affected when you exit Setup in this way.

2.1.5 Retrieving Previous Values

Because changes to parameters are not permanent until you save them, you can recall the set of last-saved values.

To recall last-saved values,

press **SHIFT/R** while viewing any of the Setup lines, or

move the cursor to "Recall Saved Values" (General Setup Screen) and press the Enter key.

The settings will be restored and the terminal will exit the Setup mode.

2.1.6 Retrieving Default Values

You can also quickly return all settings to their initial, or "default", values (the ones set at the factory).

To recall the default values and exit Setup,

press **SHIFT/D**, or

move the cursor to "Default Values" (General Setup Screen) and press the Enter key.

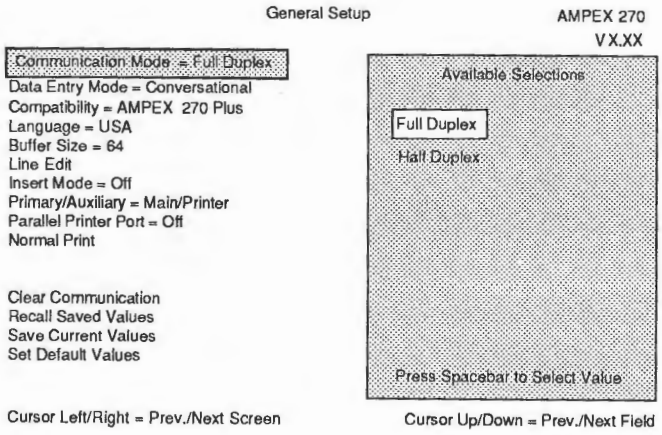
NOTE: SHIFT/D does not return programmed function keys to their default values. (See Section III for instructions on how to program each type of key.)
[Remember: retrieved settings are not permanent until you save them.]

2.2. SETUP SCREENS

There are a total of 13 setup screens containing operating parameters and feature selections. (All setup screens are shown in default selections for Ampex 270 native mode.)

SETUP SCREEN	SETS PARAMETERS FOR
General	Communication mode, compatibility type, keyboard character set, editing mode, etc.
Display	Appearance of the display
Status Line/ Submenu	Display of messages, labels; special editing characteristics (see submenus listed below)
Communication	Primary port, i.e., communication with host computer; Auxiliary port, i.e., communication with printer.
Keyboard	Operation of the keyboard
(entered from Status Line/Submenu)	
Edit User Lines	Opens User Line 1 and User Line 2 for Editing
Define Function Key	Contents of function key(s)
Define Answerback	Contents of Answerback message to host
Define Terminator	End of message terminators
Define Editing Keys	Contents (ASCII) of editing keys
Define Window	Partitioning of display screen
Set Tab	Tab stop settings
Set Time of Day	Time setting

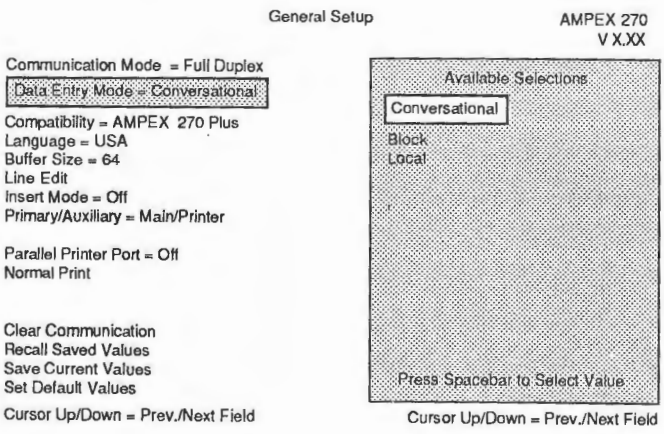
2.2.1 General Setup Menu



Communication Mode Setup

Communication Mode = Full Duplex

Sets method of communication with host. Set to FDX (full duplex) if host echoes codes received from terminal back to the terminal. Set to HDX (half duplex) if host does not echo codes back to the terminal

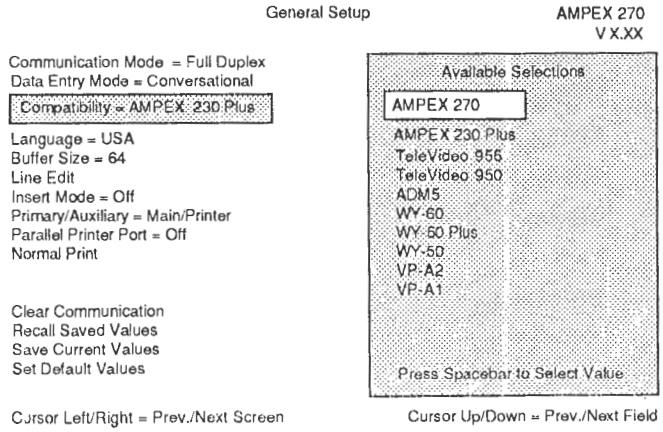


Data Entry Mode Setup

Data Entry Mode = Conversational

Sets nature of link between terminal and host computer. *Conversational* allows immediate data transmission between terminal and the host computer; *Block* allows for text entry and editing before sending data to the host computer. *Local* allows for text entry and editing without transmission

2.2.1 General Setup Menu (Continued)

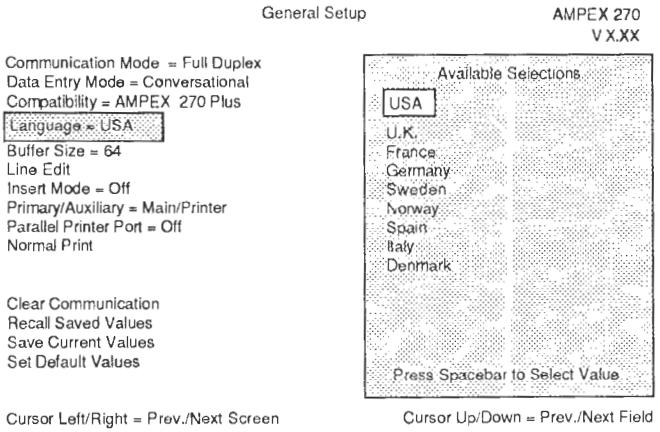


Compatibility Setup

Compatibility = Ampex 270

Sets general operating characteristics of terminal to native mode or to an emulation.

Ampex 270	Ampex 230 plus
TeleVideo 955	TeleVideo 950
Lear Siegler ADM5	Wyse 60
Wyse 50 Plus	Wyse 50
ADDS Viewpoint A2	ADDS Viewpoint A1



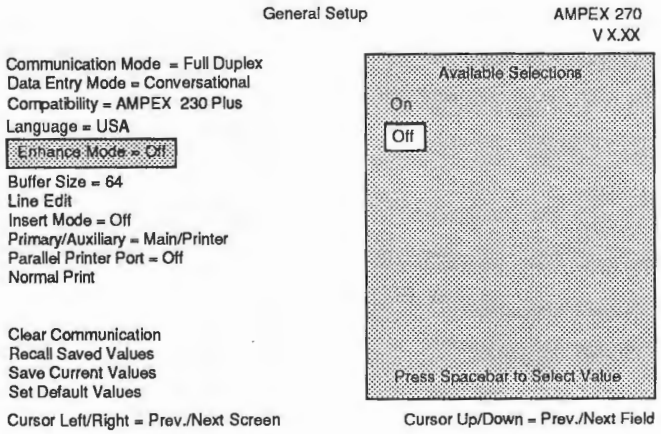
Language Setup

Language = USA

Sets national character set keyboard. (See Appendix B.)

UK	Norway
France	Spain
Germany	Italy
Sweden	Denmark

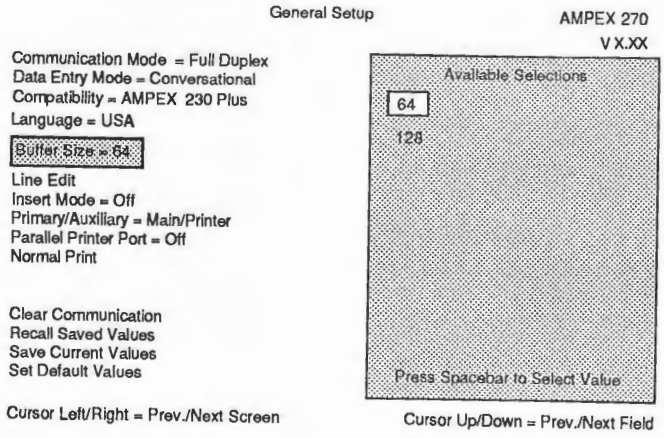
2.2.1 General Setup Menu (Continued)



Enhance Mode Setup

Enhance Mode = Off

Sets availability of terminal's native features to an emulation "enhancing" the emulated terminal's operation. Set to ON for the added features (programmable function keys, 132 column, etc.)

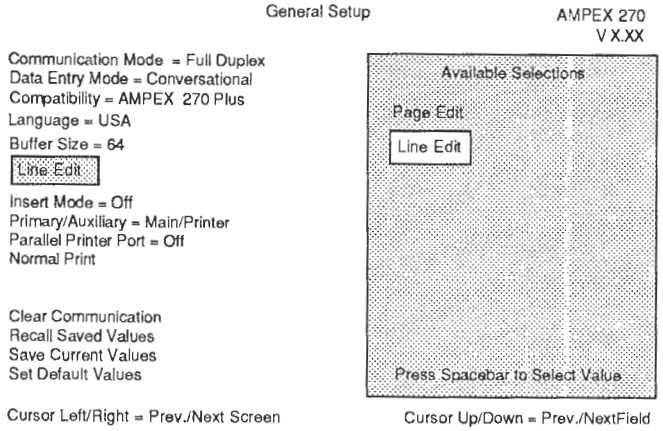


Buffer Size Setup

Buffer Size = 64

Sets the receive buffer's fill limit when the terminal sends the XOFF code or lowers the DTR line.

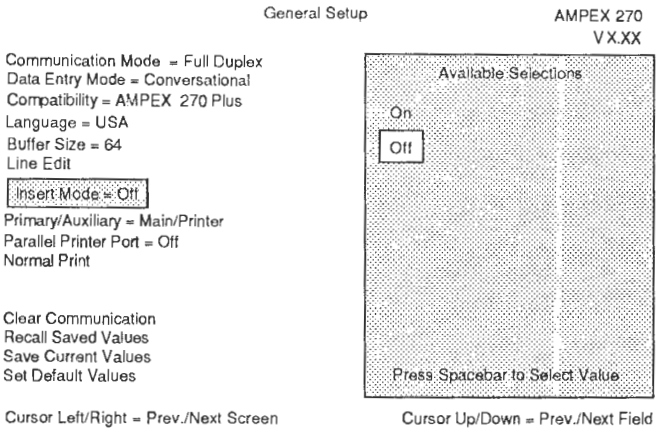
2.2.1 General Setup Menu (Continued)



Line/Page Edit Setup

Line Edit

Sets scope of editing. *Line Edit:* replaces characters to end of line; *Page Edit:* replaces characters to end of page.

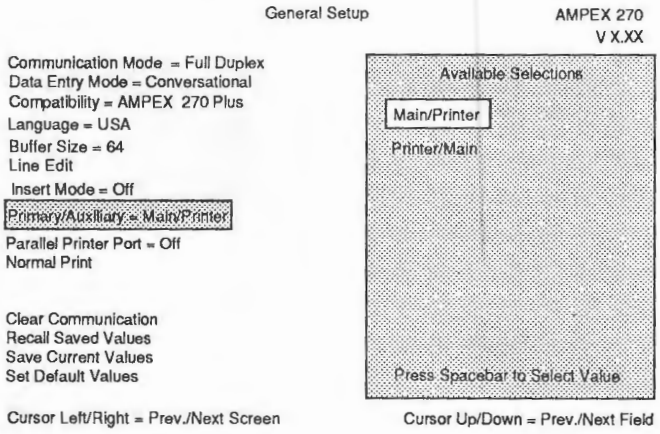


Insert Mode Setup

Insert Mode = Off

Sets editing style. Insert *off:* typing replaces characters. Insert *on:* typing inserts characters.

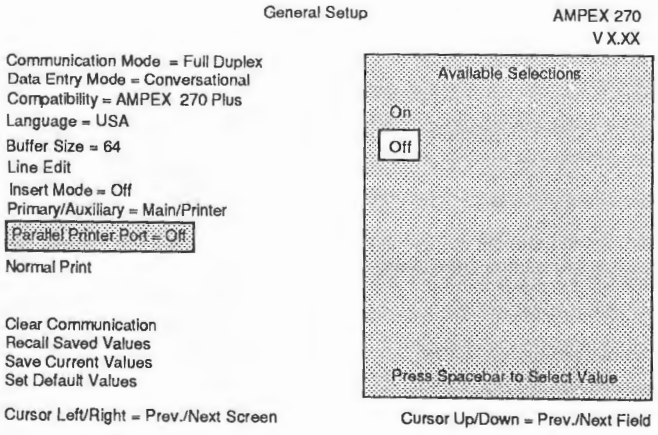
2.2.1 General Setup Menu (Continued)



Primary/Auxiliary Port Setup

Primary/Auxiliary = Main/Printer

Configures Main (PRIMARY PORT) and Auxiliary (PRINTER PORT) ports. If *Main/Printer*, selects PRIMARY PORT for data communications and PRINTER PORT as printer port. If *Printer/Main* selects PRINTER PORT for data communications and PRIMARY PORT as printer port.

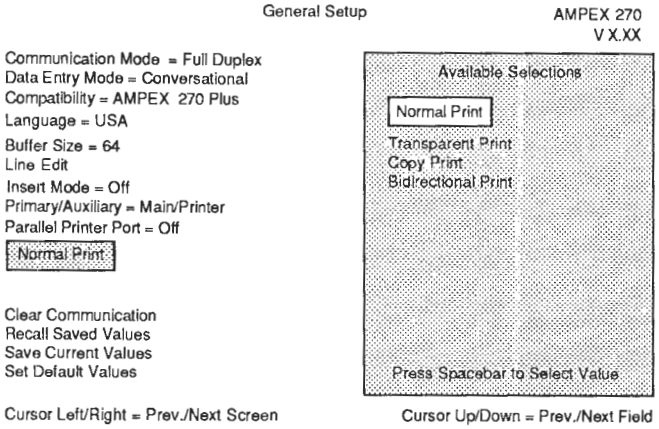


Parallel Printer Port Setup

Parallel Printer Port = Off

Sets operating characteristics of auxiliary port. Set to "Parallel Printer Port = On" if you want the port to act as a parallel port (remember to attach the parallel printer port adapter to the port). Set to "Parallel Printer Port = Off" if you want the port to act as an RS423 serial port. (Make sure the adapter is not attached to the port.)

2.2.1 General Setup Menu (Continued)

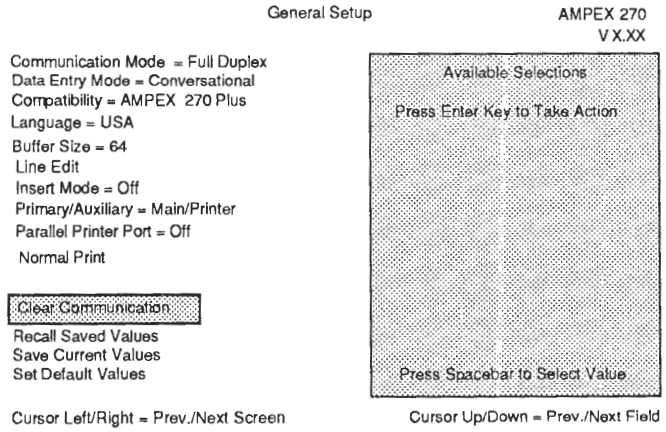


Printer Setup

Normal Print

Sets method of printing (see Section III)

Normal Print: transmits all data from HOME through cursor position to printer.
Transparent Print: All data received from host is sent to printer.
Copy Print: All data received from host is sent to printer and to screen.
Bidirectional Print: Allows printer to send data to host during printing.

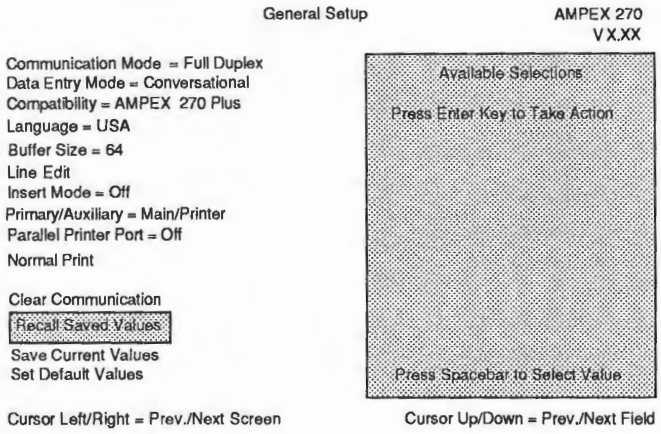


Communication Setup

Clear Communication

If you press ENTER when you exit Setup, communications are cleared as follows: abort print operations in progress, abort escape sequence and control sequence processing, clear keyboard, receive, and transmit buffers, remove terminal from transparent print mode, send XON to host, reset XOFF received flags on both ports.

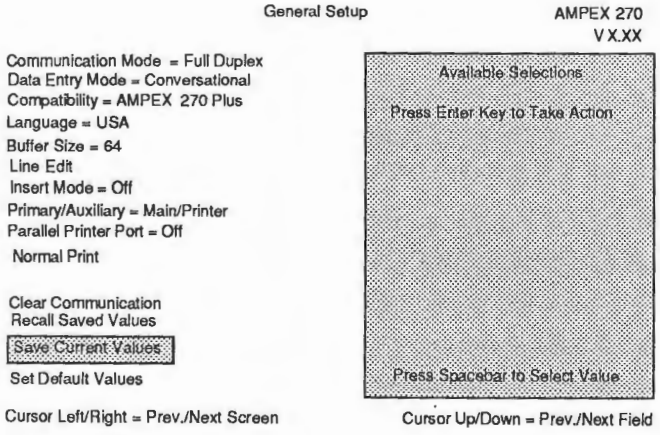
2.2.1 General Setup Menu (Continued)



Recall Save Values Setup

Recall Saved Values

Press ENTER to restore the set of last-saved parameter values and exit Setup. Display will be cleared.

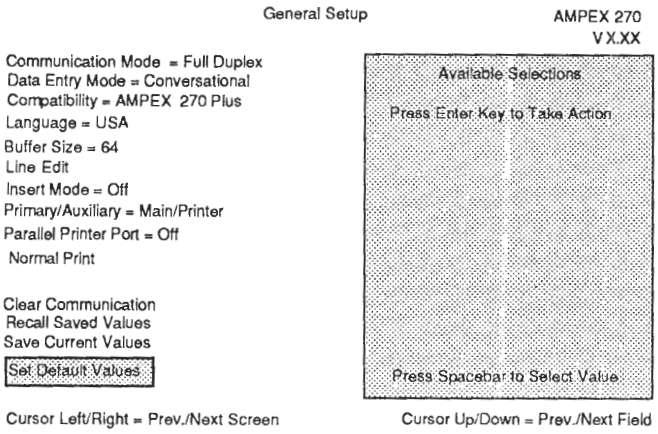


Save Current Values Setup

Save Current Values

Press ENTER to save currently displayed parameter values and exit Setup.

2.2.1 General Setup Menu (Continued)

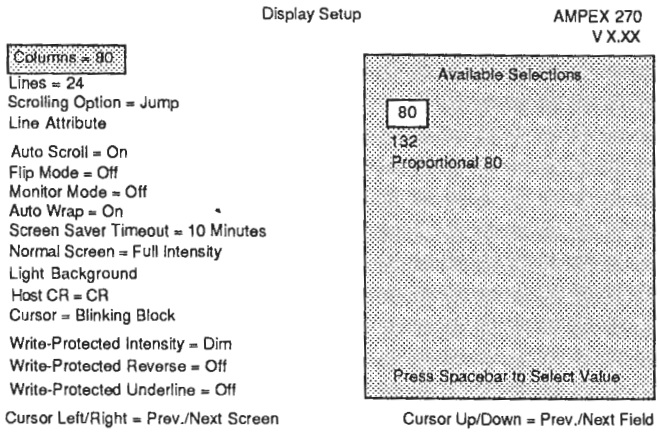


Set Default Values Setup

Set Default Values

Press ENTER to return all parameters to their original default values and exit Setup. Display will be cleared.

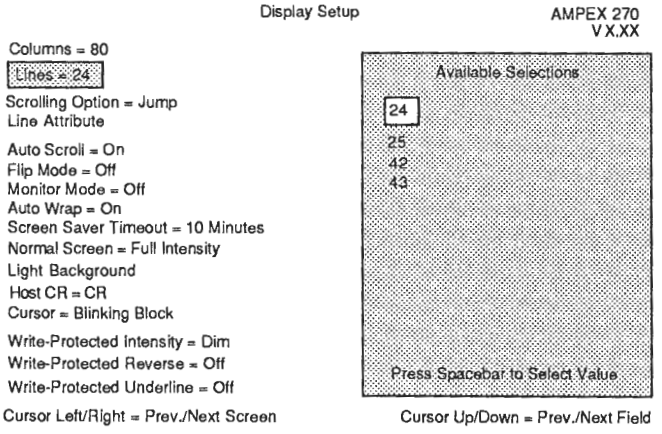
2.2.2 Display Setup Menu



Number of Columns Setup

Columns = 80

Sets the line length. (Note: *Proportional 80* is not available if display is split into more than one window).

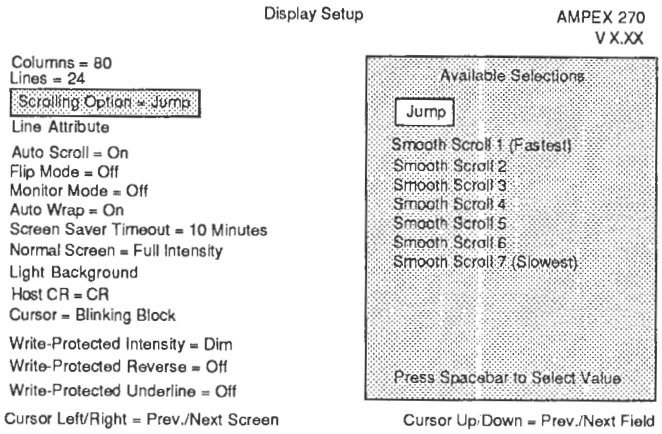


Number of Lines Setup

Lines = 24

Sets number of lines displayed on screen.

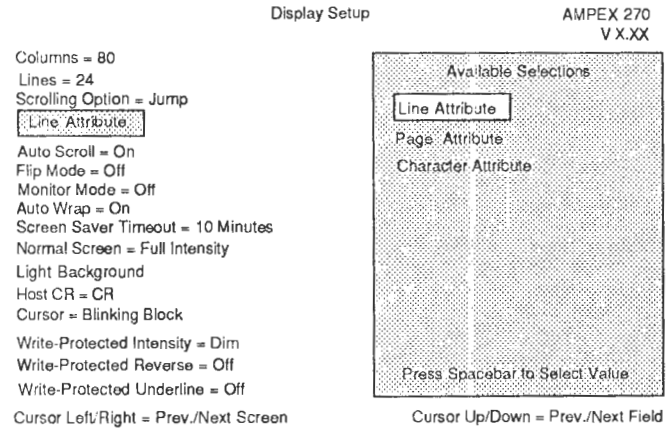
2.2.2 Display Setup Menu (Continued)



Scrolling Option Setup

Scrolling Option = Jump

Sets method and rate at which data is received from host. If *Jump* , data is scrolled on screen as fast as it is received. If *Smooth Scroll n*, data scrolls one line at a time.

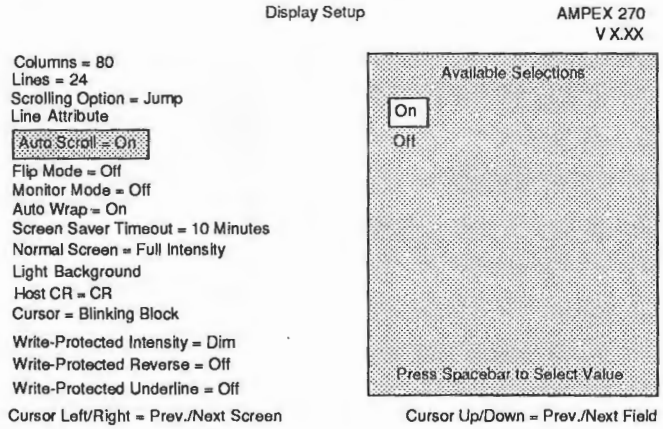


Attribute Setup

Line Attribute

Sets scope of affected characters when using video attributes. If *Line Attribute*, characters affected are only from cursor to the end of the line. If *Page Attribute*, characters affected are only those from cursor to end of page. If *Character Attribute*, only the character at the cursor position is affected.

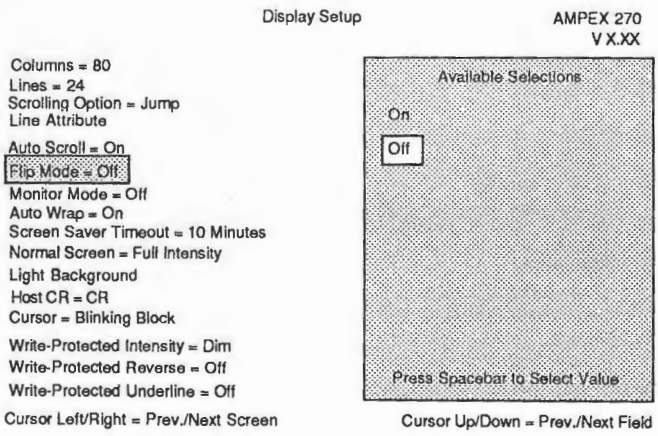
2.2.2 Display Setup Menu (Continued)



Auto Scroll Setup

Auto Scroll = On

Sets effect of data which exceed last line of a page. If *On*, all data moves up one line (on page) to make room for new data. If *Off*, data remains in place; new data overwrites existing data, beginning at HOME position (of page).

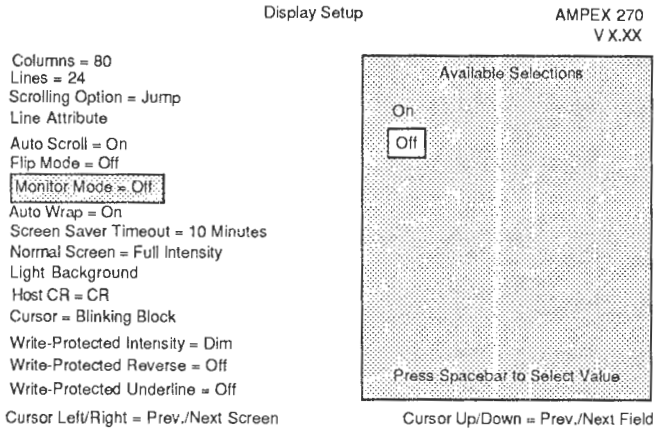


Flip Mode Setup

Flip Mode = Off

Sets writing location of data exceeding last line on a page. If *On*, data is written on next page. If *Off*, data is written on same page.

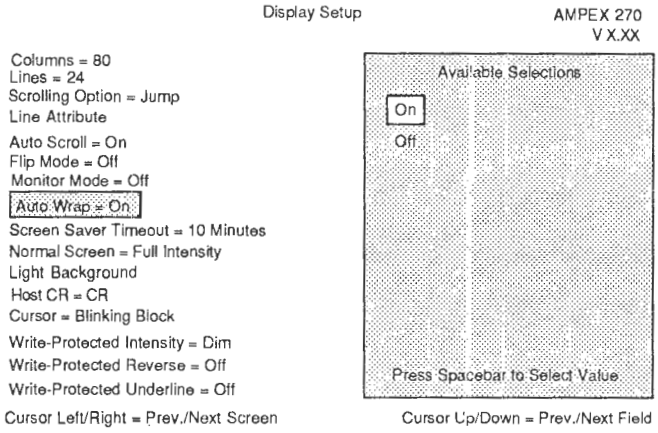
2.2.2 Display Setup Menu (Continued)



Monitor Mode Setup

Monitor Mode = Off

Sets whether or not to display all characters, including control codes. If *On*, displays all characters. If *Off*, displays only alphabet and numeric characters.

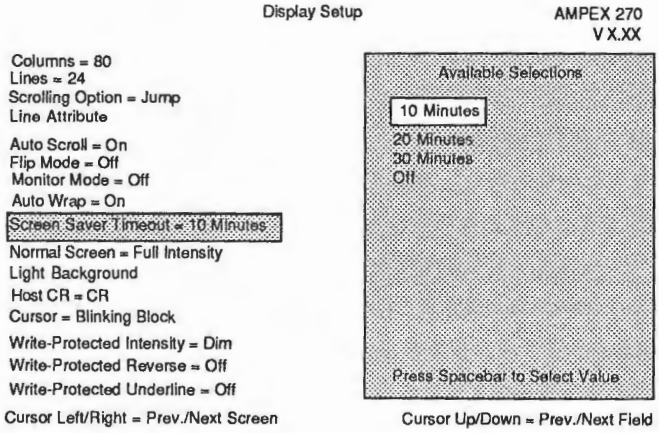


Auto Wrap Setup

Auto Wrap = On

Sets effect of data which exceeds end of a line. If *On*, cursor and subsequent data wraps around to beginning of next line. If *Off*, cursor remains at end of line and each subsequent character overwrites existing character in last column.

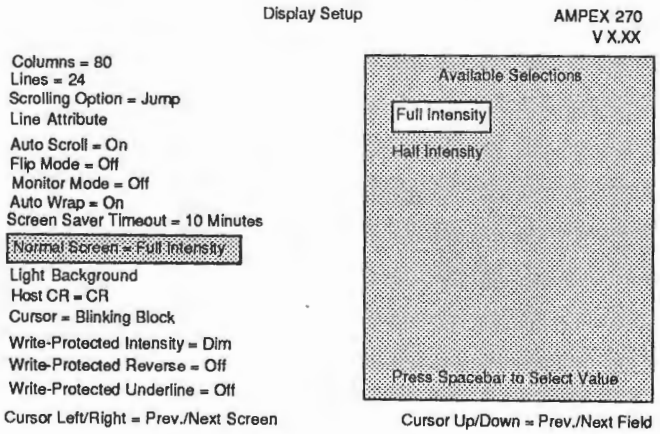
2.2.2 Display Setup Menu (Continued)



Screen Save Setup

Screen Saver Timeout = 10 Minutes

Sets duration of screen inactivity before display is temporarily blanked. Activity affecting screen causes previous display to reappear. (Note: if Screen Saver is set to *Off*, screen must be dimmed manually during periods of inactivity or tube may become damaged.)

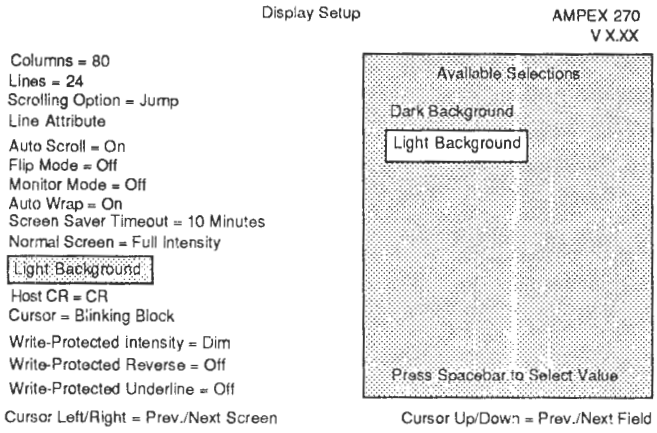


Screen Intensity Setup

Normal Screen = Full Intensity

Sets screen background brightness. (Note: If Normal Screen is set to *Full Intensity*, contrast control is disabled. If Normal Screen is set to *Half Intensity*, contrast control is enabled and background brightness can then be varied from zero to full intensity.)

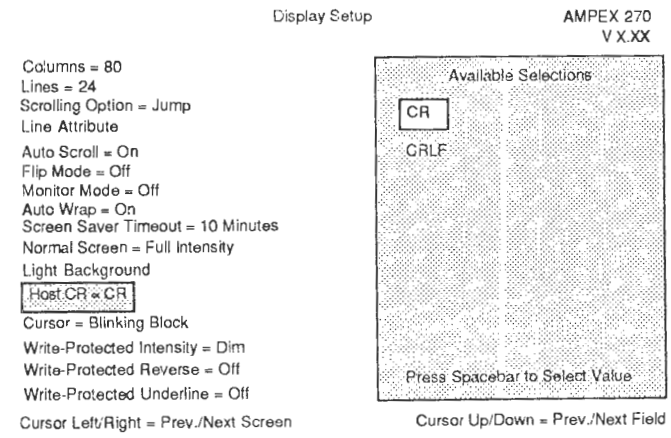
2.2.2 Display Setup Menu (Continued)



Background Appearance Setup

Light Background

Sets appearance of characters against screen background. If *Light Background*, dark characters appear against light background. If *Dark Background*, light characters appear against dark background.

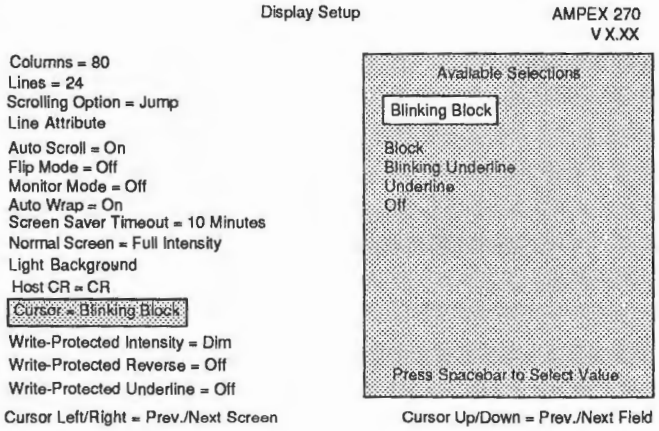


Carriage Return Setup

Host CR = CR

Sets effect of carriage return received from host. If CR, moves cursor to column 1 of the same line. If CRLF, moves cursor to column 1 of the next line.

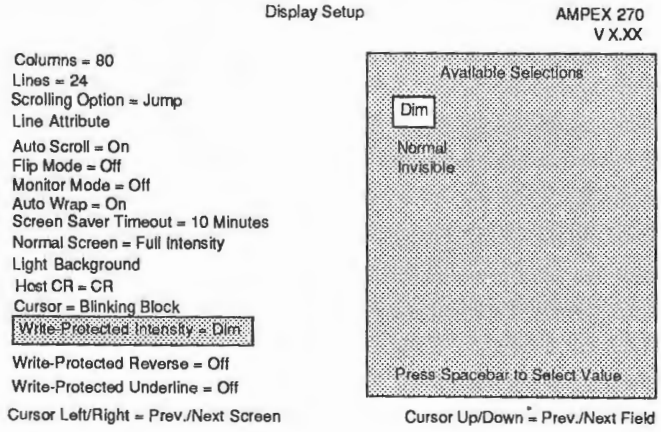
2.2.2 Display Setup Menu (Continued)



Cursor Appearance Setup

Cursor = Blinking Block

Sets appearance of cursor. (*Off* means cursor is not displayed)

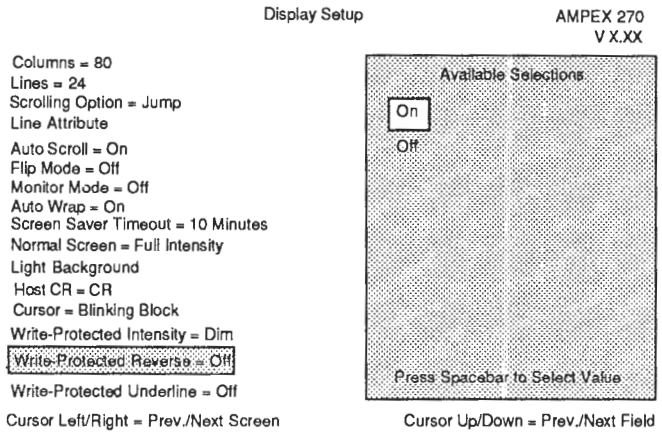


Write-Protected-Character Appearance Setup

Write Protected Intensity = Dim

Sets intensity of write-protected characters. If *Dim*, write-protected characters are displayed in half intensity. If *Normal*, characters appear the same as unprotected characters. If *Invisible*, write-protected characters are not displayed.

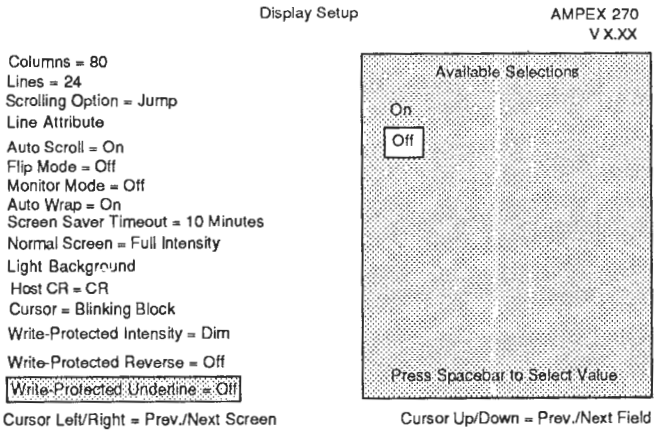
2.2.2 Display Setup Menu (Continued)



Write-Protected-Character, Reverse-Video Setup

Write-Protected Reverse = Off

Sets whether or not write-protected characters are displayed in reverse video.

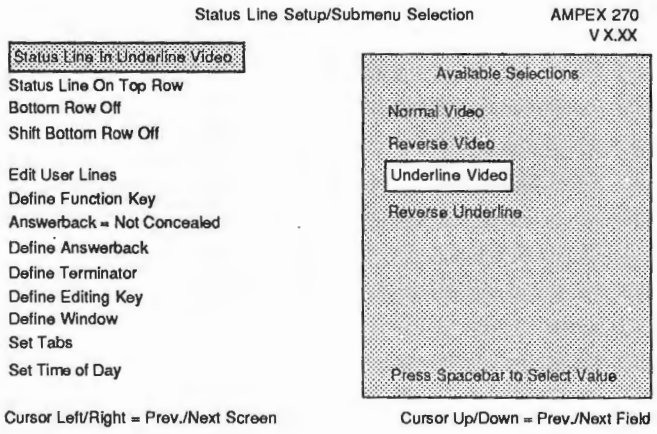


Write-Protected-Character, Underline Setup

Write Protected Underline = Off

Sets whether or not write-protected characters are displayed underlined.

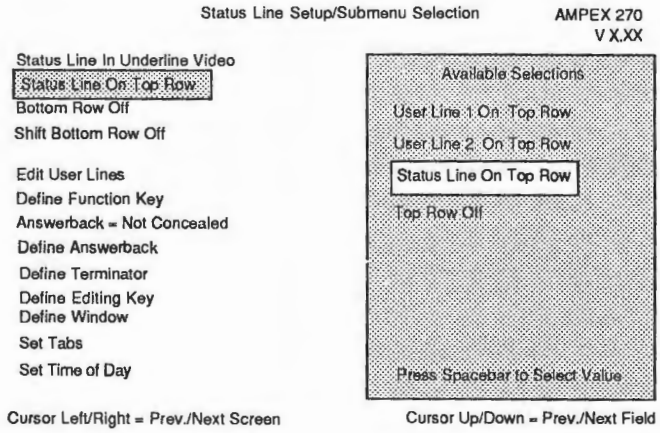
2.2.3. Status Line/Submenu Setup



Status Line Appearance Setup

Status Line in Underline Video

Sets appearance of status line, if it is displayed.



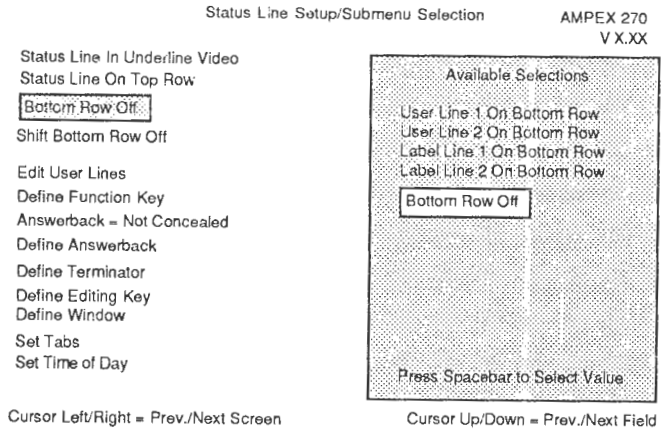
Top Row Contents Setup

Status Line on Top Row

Sets selected contents of top row screen:

User Line 1
User Line 2
Status Line
Off (i.e., not displayed)

2.2.3. Status Line/Submenu Setup (Continued)



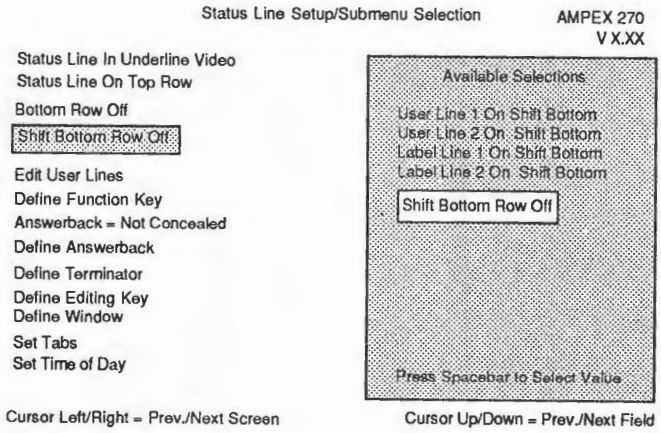
Bottom Row (No Shift) Contents Setup

Bottom Row Off

Sets selected contents to be displayed on the bottom row of the screen whenever any key except a Shift key is pressed.

User Line 1 on Bottom Row: Message line available to an application.
User Line 2 on Bottom Row: Message line available to an application.
Label Line 1 on Bottom Row: Labels for Function Key
Label Line 2 on Bottom Row: Labels for Function Key
Status Line on Bottom Row: Operating Status of terminal.
Bottom Row Off: Bottom row not displayed.

2.2.3. Status Line/Submenu Setup (Continued)



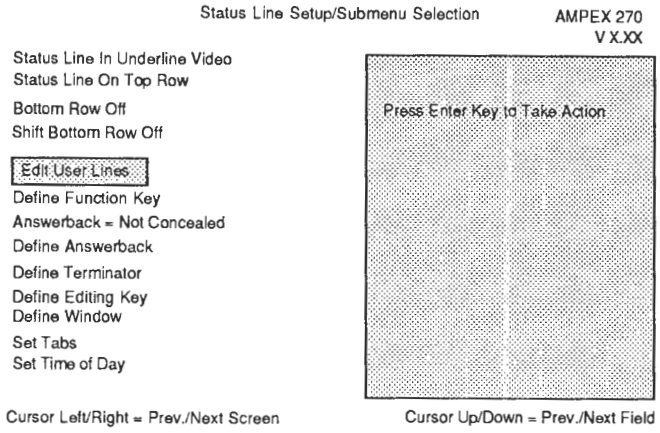
Bottom Row (Shift) Contents Setup

Shift Bottom Row Off

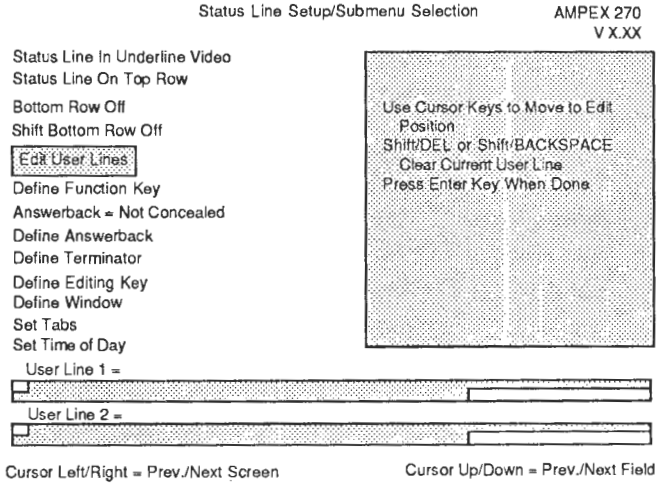
Sets selected contents to be displayed on the bottom row of the screen whenever a Shift Key is pressed:

User Line 1
User Line 2
Label Line 1: Labels for Function Key
Label Line 2: Labels for Function Key
Off: Not displayed.

2.2.3. Status Line/Submenu Setup (Continued)



Edit User Line Setup

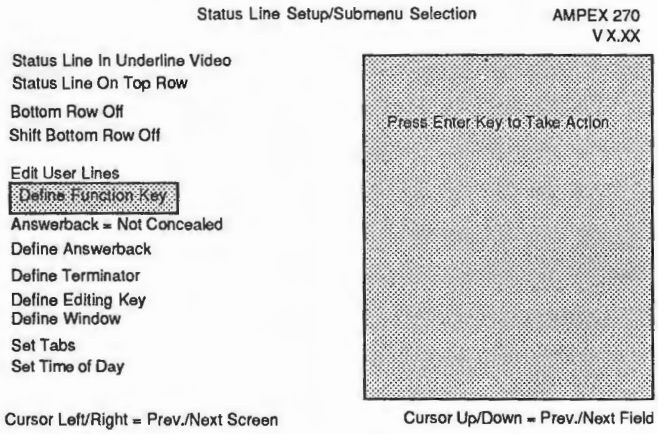


Edit User Line Submenu Setup

Edit User Lines

Press ENTER to access screen for editing of the contents of user lines. The two user lines display at the bottom of the screen. Cursor appears in column 1 of User Line 1. Type in desired contents for each line. (Note instructions in Options Box.) Refer to Section III.

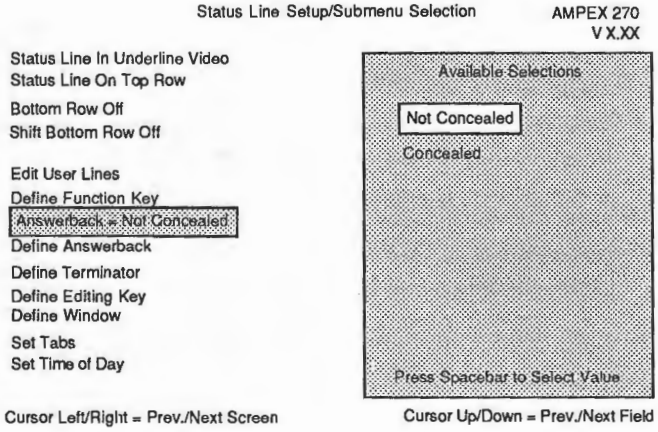
2.2.3. Status Line/Submenu Setup (Continued)



Function Key Command Setup

Define Function Key

Press ENTER to access screen for editing of function key command sets. For Submenu description, refer to paragraph 2.2.6

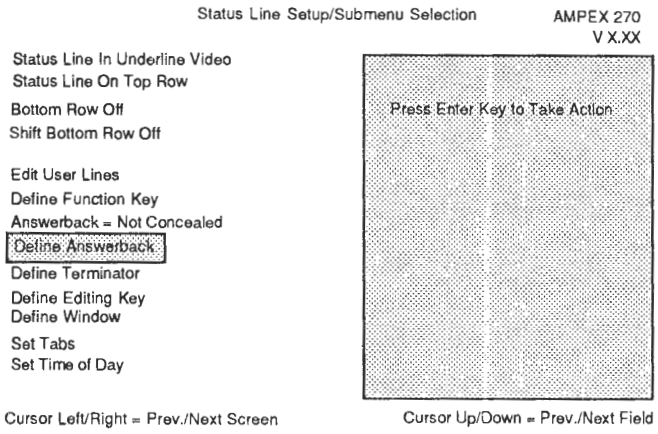


Answerback Display Setup

Answerback = Not Concealed

Sets whether the Answerback message is displayed or not.

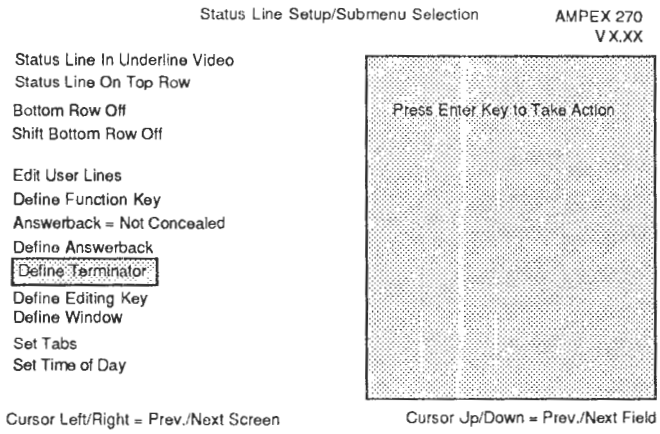
2.2.3. Status Line/Submenu Setup (Continued)



Answerback Message Definition Setup

Define Answerback

Press ENTER to access screen for defining the Answerback message. Answerback message appears at bottom of screen. (Note instructions in Options Box.) For Submenu description, refer to paragraph 2.2.7

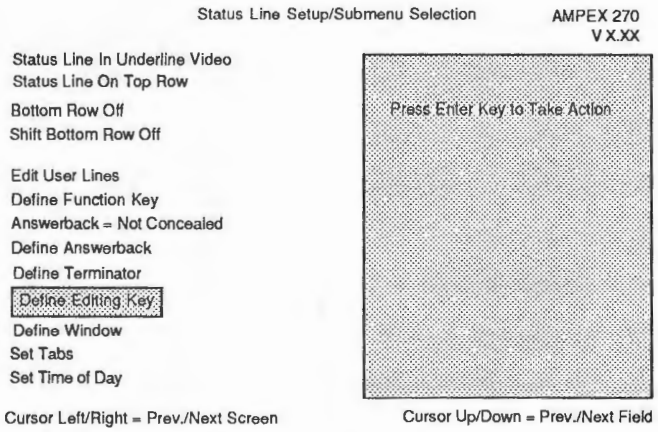


Terminator Definition Setup

Define Terminator

Press ENTER to access screen for defining terminators. For Submenu description, refer to paragraph 2.2.8.

2.2.3. Status Line/Submenu Setup (Continued)



Editing-Key Definition Setup

Define Editing Key

Press ENTER to access screen for redefining the editing keys. Refer to Section III for Functional description.

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Editing Key Setup

Set Editing Key Default Values

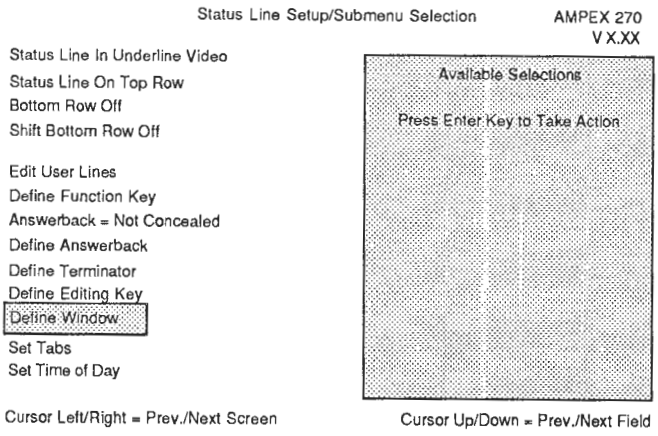
Edit Keys		Normal	Shift	Control	Shift-Control
CE	=	C_N	C_N	E_CVO	E_CVP
PAGE	=	E_CK	E_CJ	E_CVG	E_CVG
PRINT	=	E_CP	E_CL	E_CVM	E_CVN
SEND	=	E_C7	E_C6		
ENTER	=	C_R	C_R		
TAB (Main Pad)	=	H_T	H_T		
TAB (Numeric Pad)	=	H_T	H_T		
BACK TAB	=	E_CI	E_CI		
CURSOR UP	=	V_T	E_CJ	E_CVI	E_CVI
CURSOR DOWN	=	S_Y	L_F	E_CVJ	E_CVJ
CURSOR LEFT	=	B_S	B_S	E_CVL	E_CVL
CURSOR RIGHT	=	F_F	F_F	E_CVK	E_CVK
HOME/CLEAR	=	R_S	S_B	R_S	E_C*
INS/DEL CHAR	=	E_CQ	E_CW	E_Cq	E_Cr
INS/DEL LINE	=	E_CE	E_CR	E_CN	E_CO
ERASE LINE/PAGE	=	E_CT	F_CY	E_Ct	E_Cy

Use Cursor Keys to Move to Edit Position

Press Home Key to Exit

Editing-Key Definition Submenu Setup

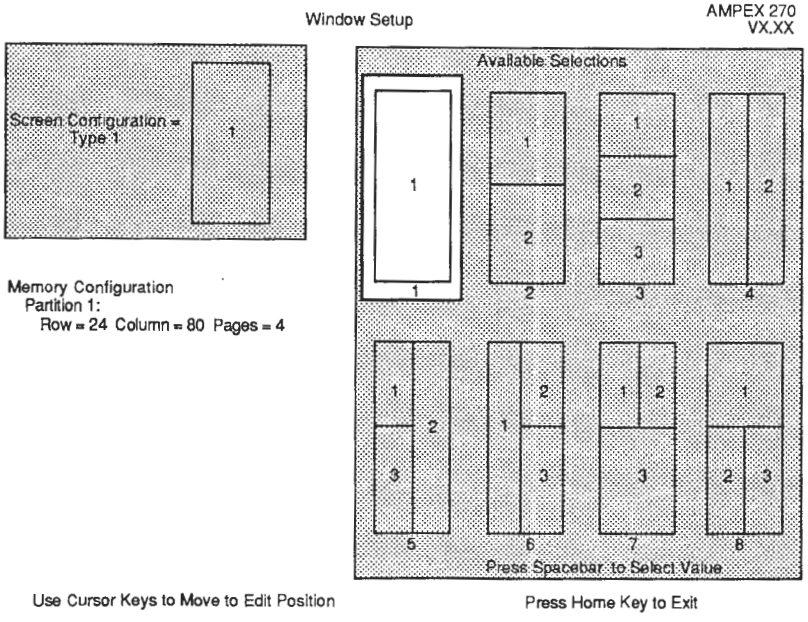
2.2.3. Status Line/Submenu Setup (Continued)



Window Definition Setup

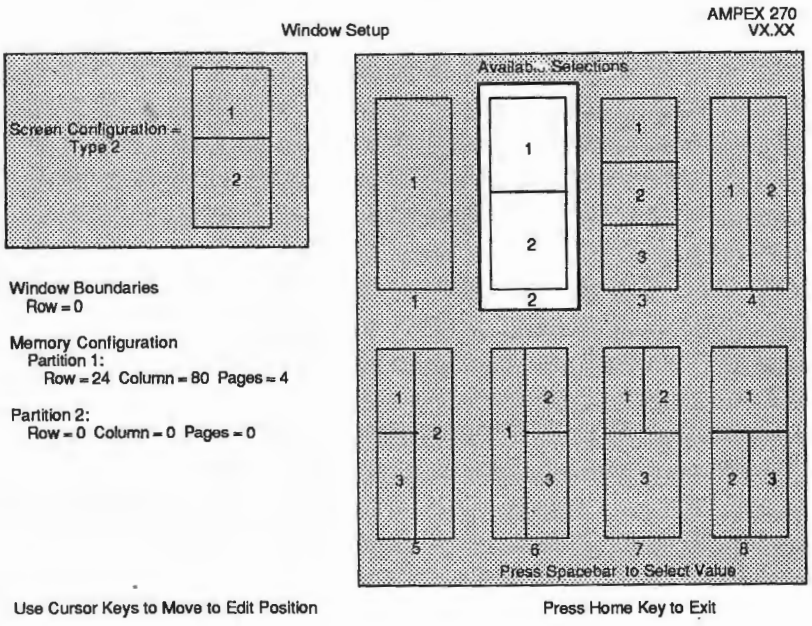
Define Window

Press ENTER to access screen for setting window configuration. Type 1 through Type 8 Windows are shown on the following pages.

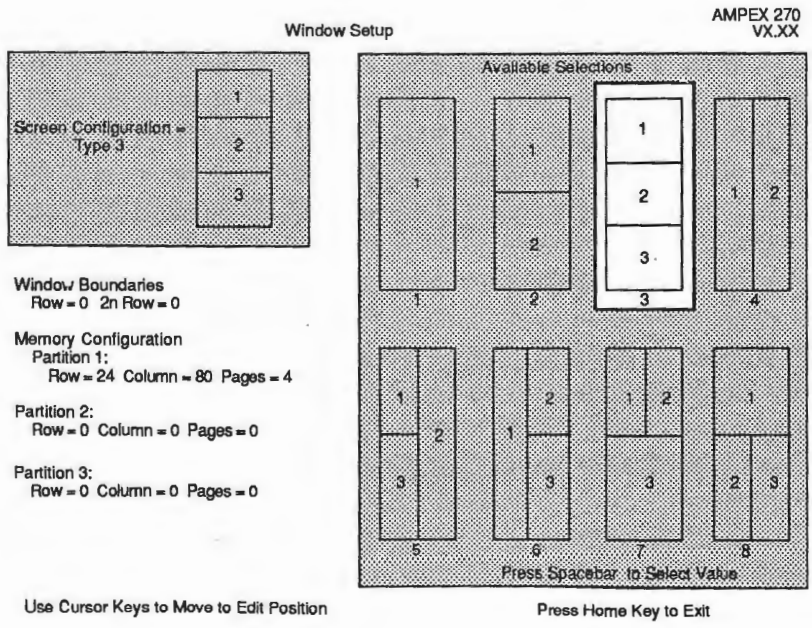


Type 1 Window Submenu Setup

2.2.3. Status Line/Submenu Setup (Continued)

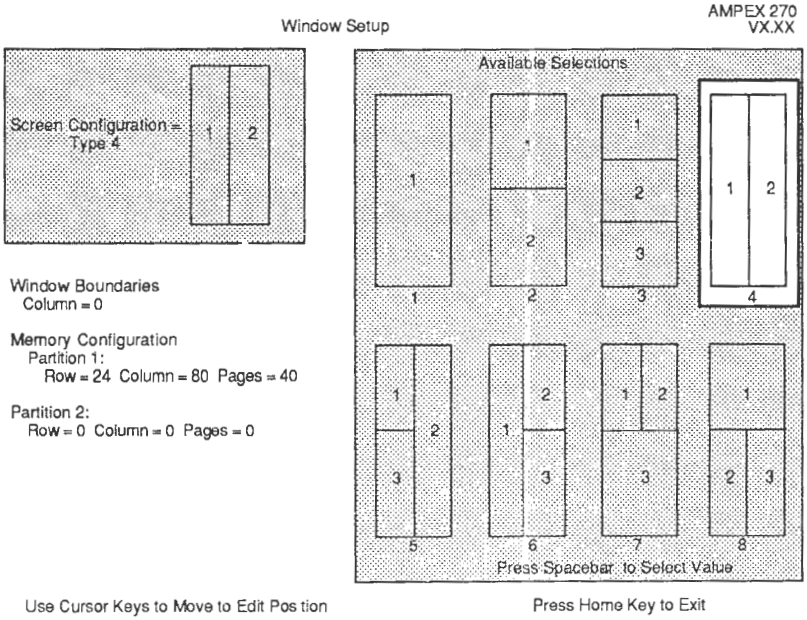


Type 2 Window Submenu Setup

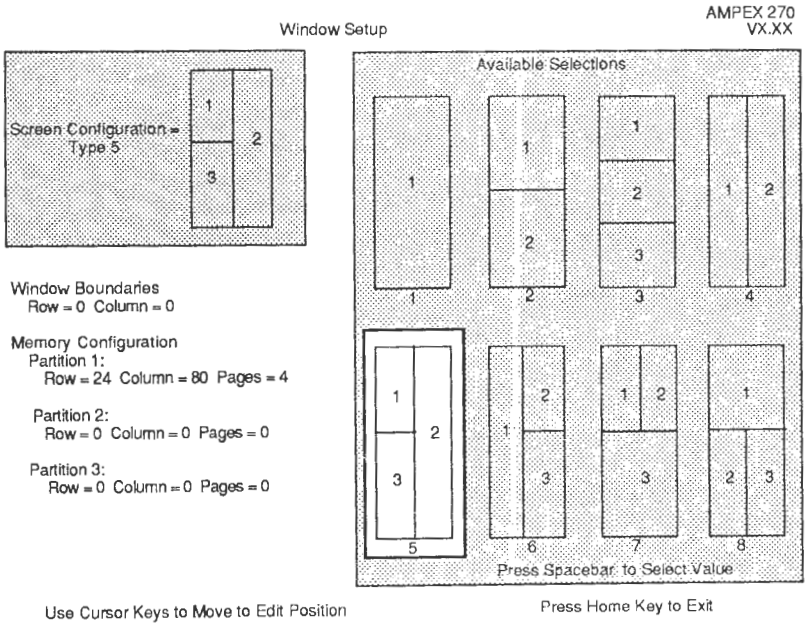

Window Setup
AMPEX 270
VX.XX
Screen Configuration = Type 3
Available Selections
Window Boundaries
Row = 0 2n Row = 0
Memory Configuration
Partition 1:
Row = 24 Column = 80 Pages = 4
Partition 2:
Row = 0 Column = 0 Pages = 0
Partition 3:
Row = 0 Column = 0 Pages = 0
Press Spacebar to Select Value
Use Cursor Keys to Move to Edit Position
Press Home Key to Exit

Type 3 Window Submenu Setup

2.2.3. Status Line/Submenu Setup (Continued)

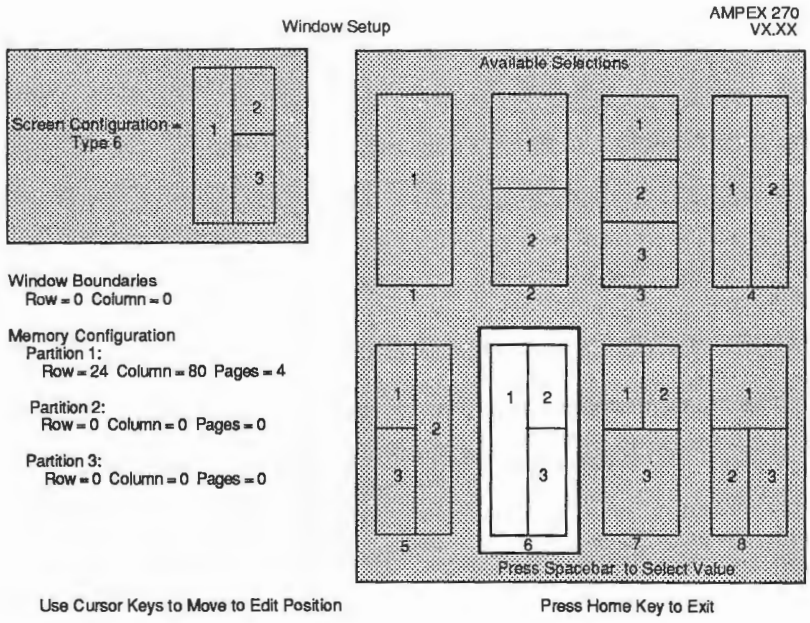


Type 4 Window Submenu Setup

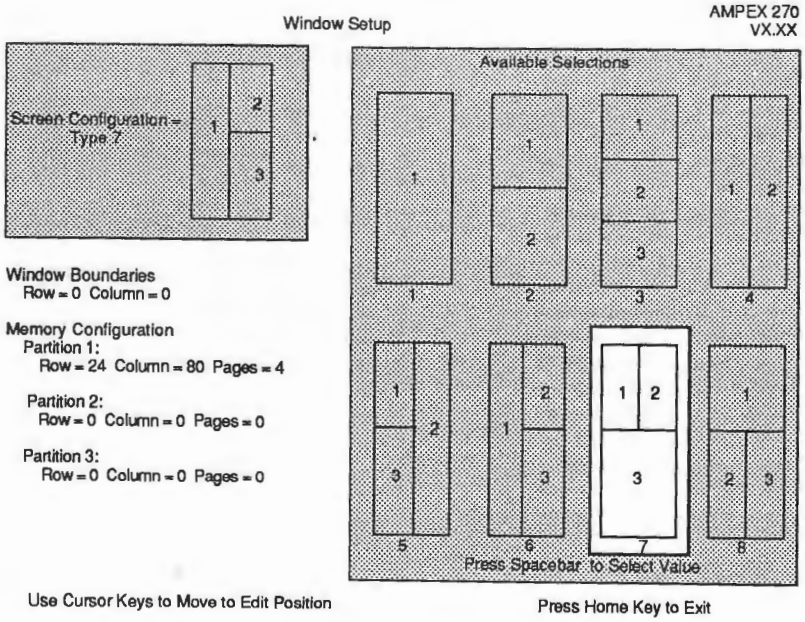

Window Setup
AMPEX 270
VX.XX
Screen Configuration =
Type 5
Available Selections
Window Boundaries
Row = 0 Column = 0
Memory Configuration
Partition 1:
Row = 24 Column = 80 Pages = 4
Partition 2:
Row = 0 Column = 0 Pages = 0
Partition 3:
Row = 0 Column = 0 Pages = 0
Press Spacebar to Select Value
Use Cursor Keys to Move to Edit Position
Press Home Key to Exit

Type 5 Window Submenu Setup

2.2.3. Status Line/Submenu Setup (Continued)

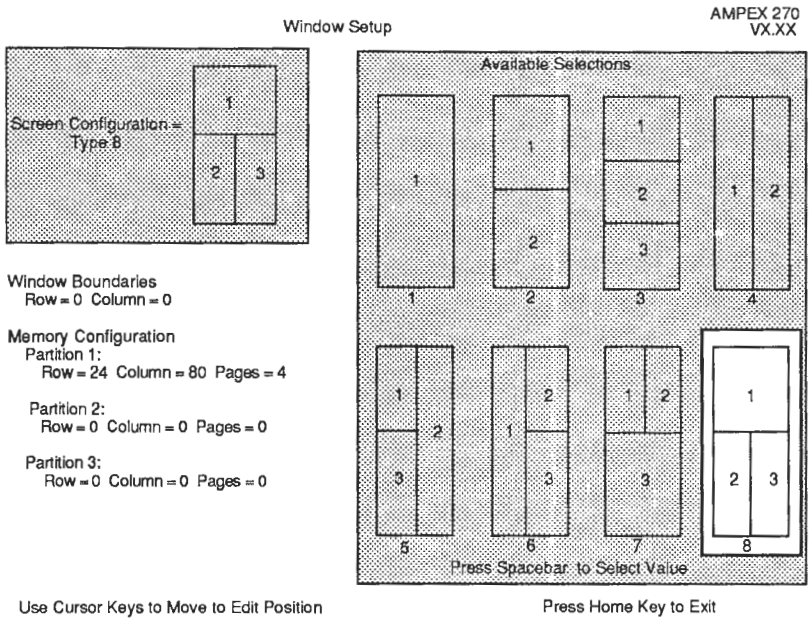

Window Setup
AMPEX 270
VX.XX
Screen Configuration = Type 6
Available Selections
Window Boundaries
Row = 0 Column = 0
Memory Configuration
Partition 1:
Row = 24 Column = 80 Pages = 4
Partition 2:
Row = 0 Column = 0 Pages = 0
Partition 3:
Row = 0 Column = 0 Pages = 0
Press Spacebar to Select Value
Use Cursor Keys to Move to Edit Position
Press Home Key to Exit

Type 6 Window Submenu Setup

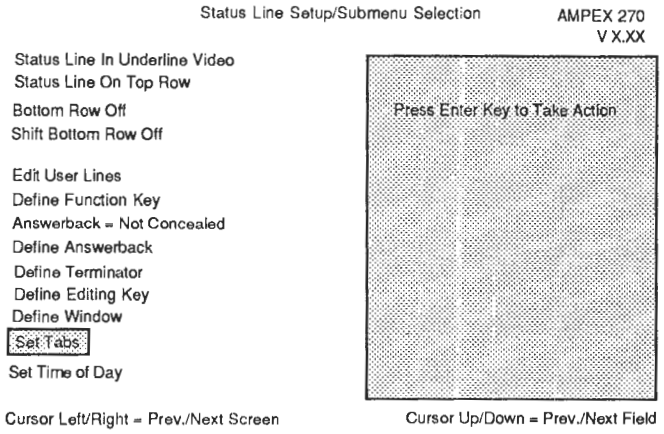

Window Setup
AMPEX 270
VX.XX
Screen Configuration = Type 7
Available Selections
Window Boundaries
Row = 0 Column = 0
Memory Configuration
Partition 1:
Row = 24 Column = 80 Pages = 4
Partition 2:
Row = 0 Column = 0 Pages = 0
Partition 3:
Row = 0 Column = 0 Pages = 0
Press Spacebar to Select Value
Use Cursor Keys to Move to Edit Position
Press Home Key to Exit

Type 7 Window Submenu Setup

2.2.3. Status Line/Submenu Setup (Continued)


Window Setup
AMPEX 270
VX.XX
Screen Configuration = Type 8
Window Boundaries
Row = 0 Column = 0
Memory Configuration
Partition 1:
Row = 24 Column = 80 Pages = 4
Partition 2:
Row = 0 Column = 0 Pages = 0
Partition 3:
Row = 0 Column = 0 Pages = 0
Available Selections
Press Spacebar to Select Value
Use Cursor Keys to Move to Edit Position
Press Home Key to Exit

Type 8 Window Submenu Setup

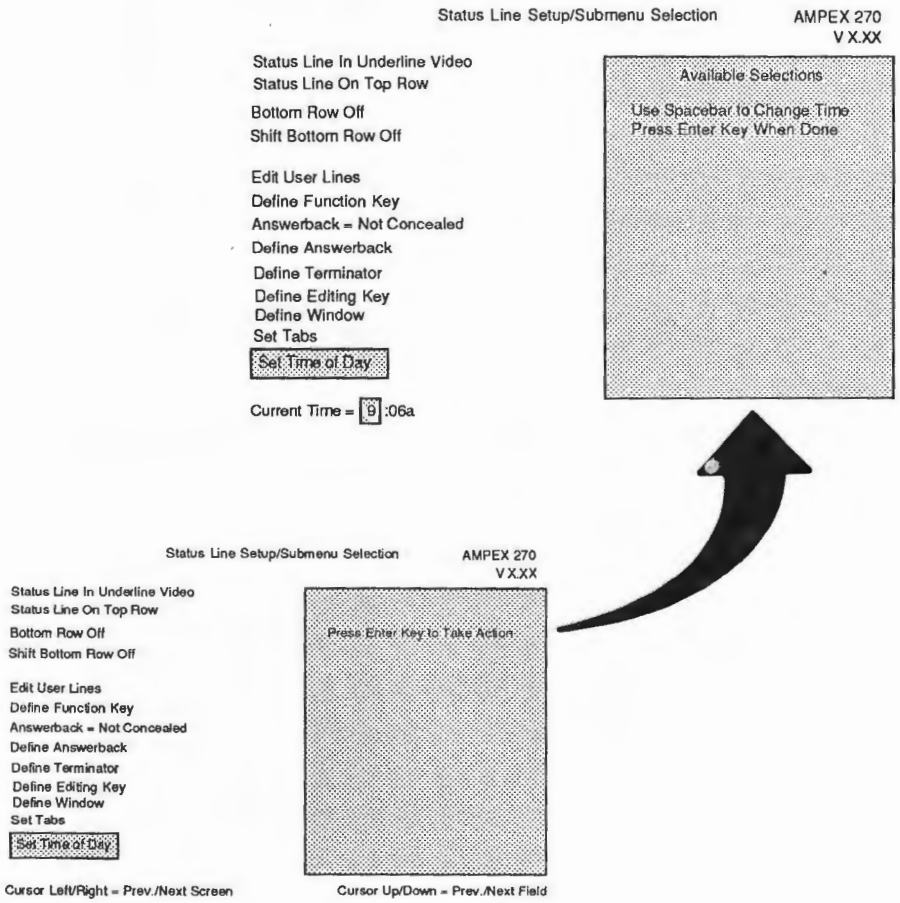


Tab Stop Setup

Set Tabs

Press ENTER to access screen for setting tap stops.

2.2.3. Status Line/Submenu Setup (Continued)

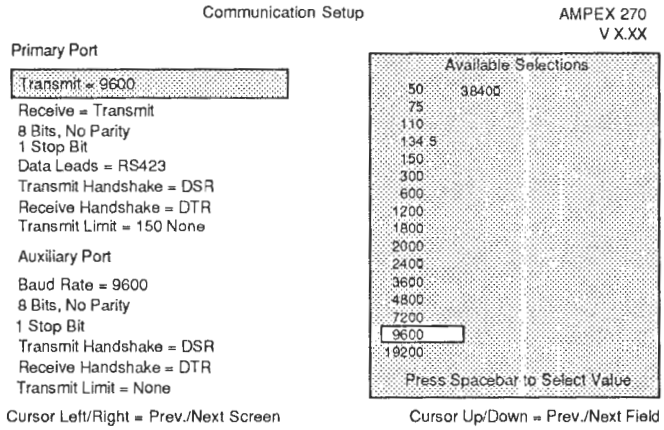


Set Time of Day

Press ENTER to access screen for setting current time. Refer to paragraph 3.10.

Time-of-Day, Submenu Setup

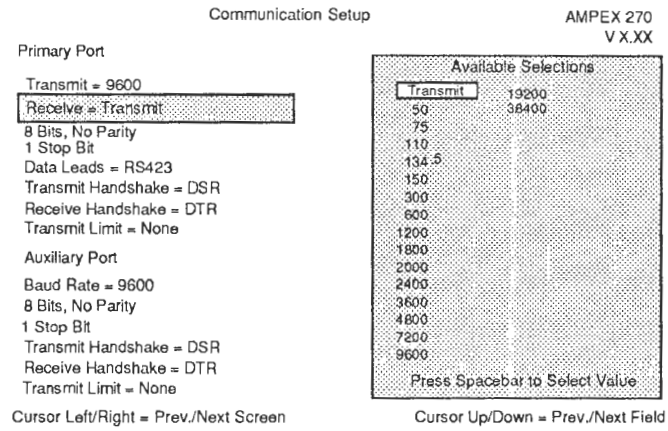
2.2.4 Communications Setup



Primary-Port Data Transmit-Rate Setup

Transmit = 9600

Sets the rate (bits/second) of transmitting data from terminal to host.

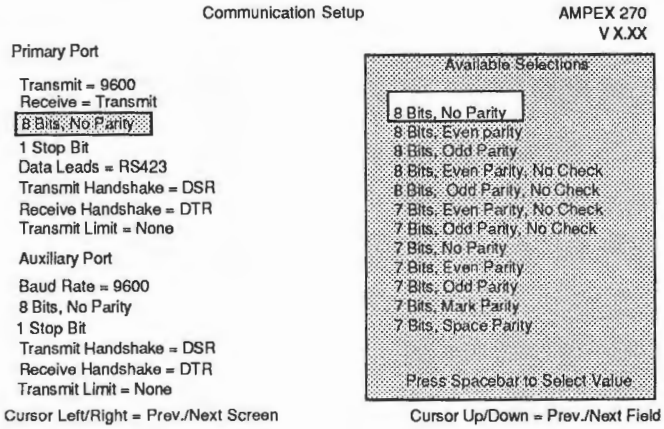


Primary-Port, Data-Received-Rate Setup

Receive = Transmit

Sets rate (bits/second) of transmitting data from host by terminal. Note: Receive = *Transmit* sets receive rate to send rate.

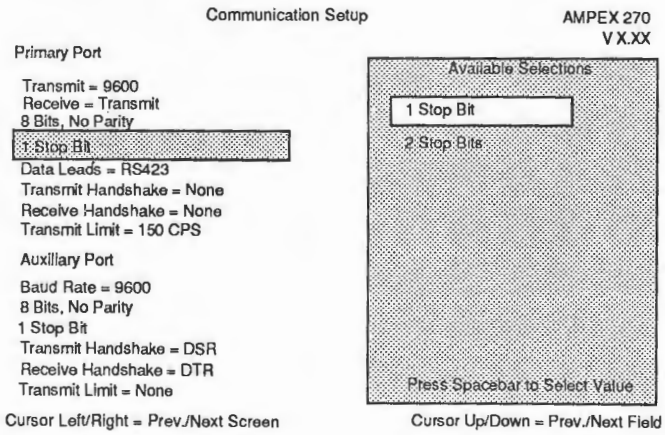
2.2.4 Communications Setup (Continued)



Primary-Port, Data-Word Configuration Setup

8 Bits, No Parity

Sets data word configuration (number of bits when transmitting data between host and terminal, contents of Bit 8, type of parity, and a parity check (if required for compatibility with host). Note: *7 Bits* means there is no eighth bit.

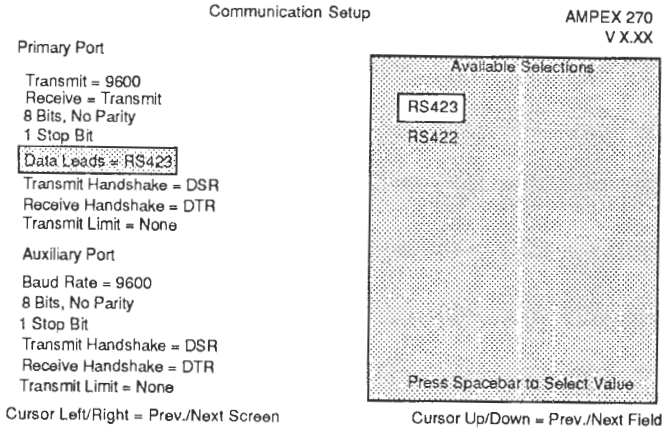


Primary-Port, Stop-Bit Configuration Setup

1 Stop Bit

Sets stop bit configuration.

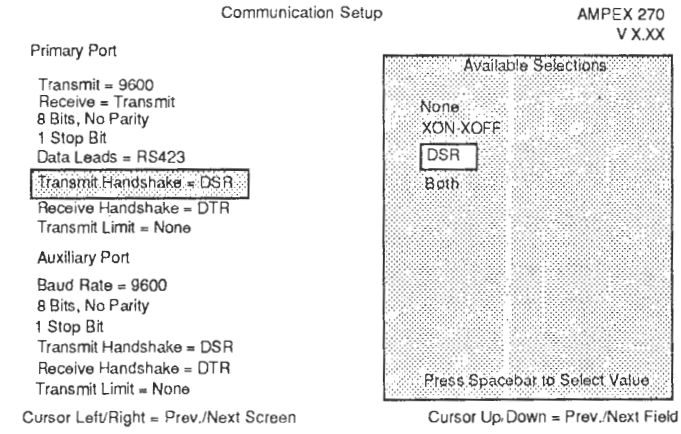
2.2.4 Communications Setup (Continued)



Primary-Port, Operating Characteristics Setup

Data Leads = RS423

Sets operating characteristics of primary port.



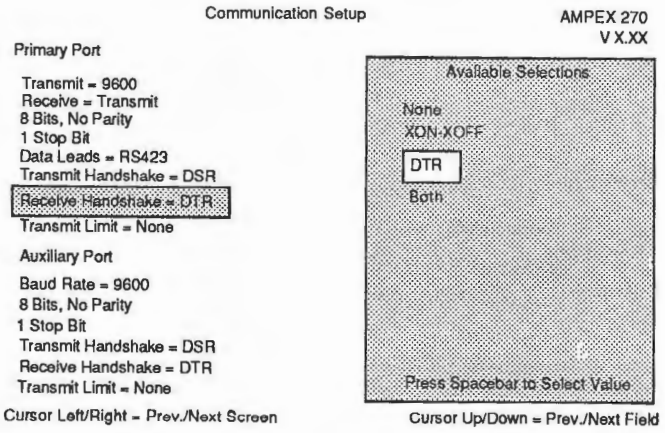
Primary-Port, Transmit-Protocol Setup

Transmit Handshake = DSR

Sets protocol for transmitting data to host:

Setting	Protocol
None	Neither DSR nor XON is used.
XON-XOFF	XON-XOFF only
DSR	Data Set Ready
Both	Data Set Ready and XON-XOFF

2.2.4 Communications Setup (Continued)

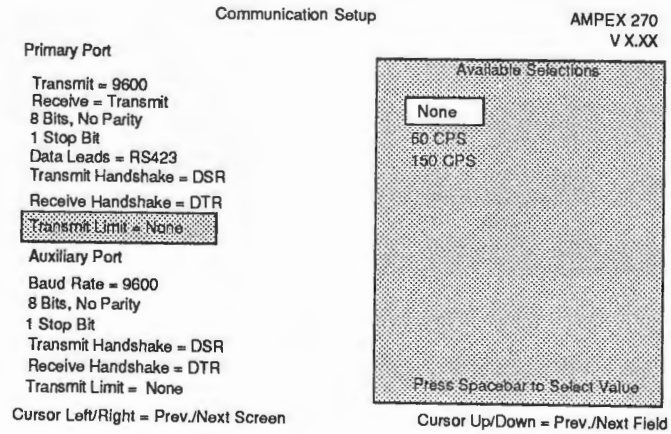


Primary-Port, Receive-Protocol Setup

Receive Handshake = DTR

Sets protocol for receiving data from host:

Setting	Protocol
None	Neither DTR nor XON is used.
XON-XOFF	XON-XOFF only
DTR	Data Terminal Ready
Both	Data Terminal Ready and XON-XOFF.

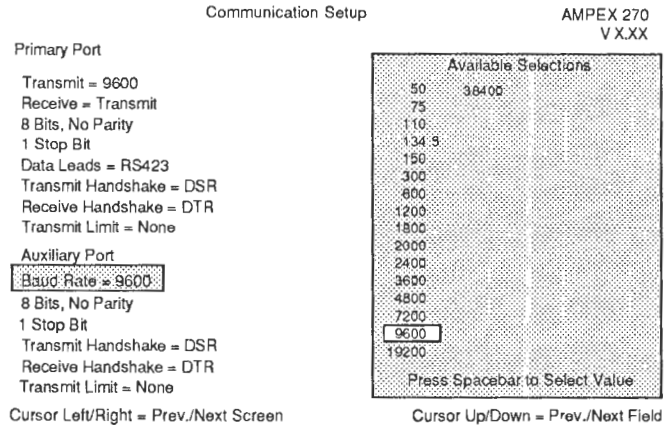


Primary-Port, Transmit-Limit Setup

Transmit Limit = None

Sets limit on rate at which characters are transmitted to host. (A limit reduces interrupt burden on host operating system.)

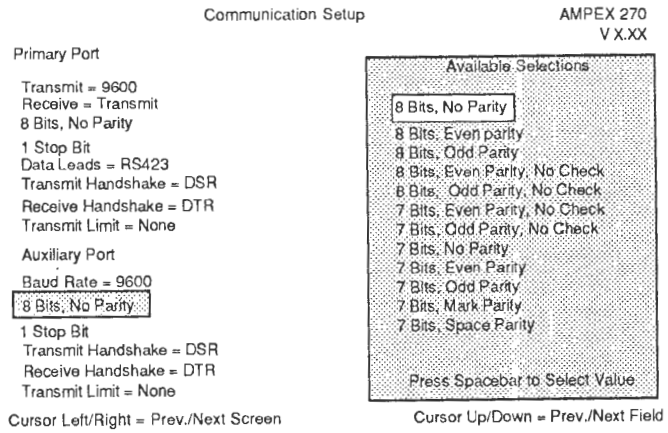
2.2.4 Communications Setup (Continued)



Auxiliary-Port, Data-Transmit-Rate Setup

Baud Rate = 9600

Sets rate (bits/second) of transmitting data through printer port.

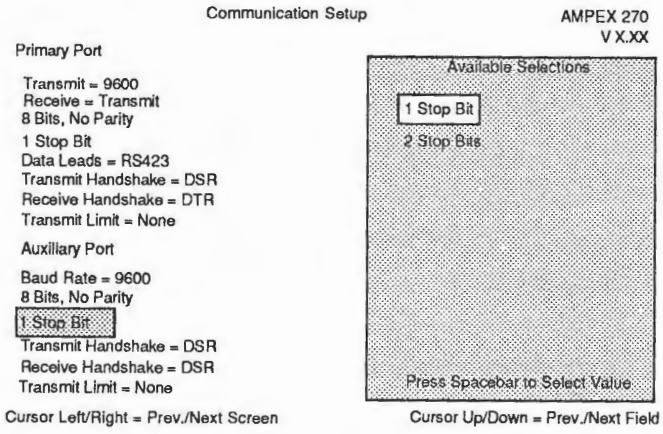


Auxiliary-Port, Data-Word Configuration Setup

8 Bits, No Parity

Sets data word configuration (number of bits when transmitting data between host and terminal, contents of Bit 8, type of parity), and a parity check (if required for compatibility with host).

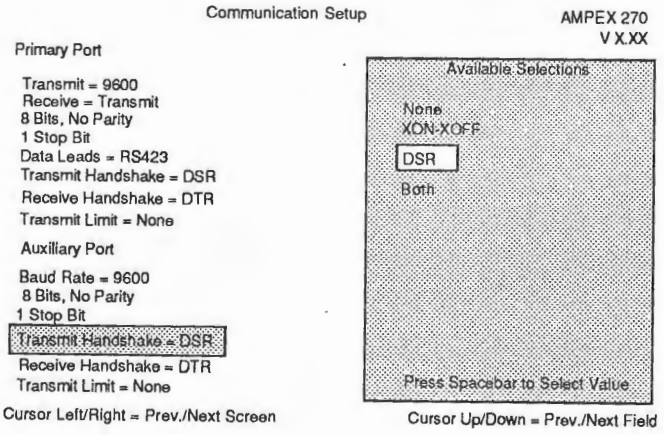
2.2.4 Communications Setup (Continued)



Auxiliary-Port, Stop-Bit Configuration Setup

1 Stop Bit

Sets stop bit configuration.



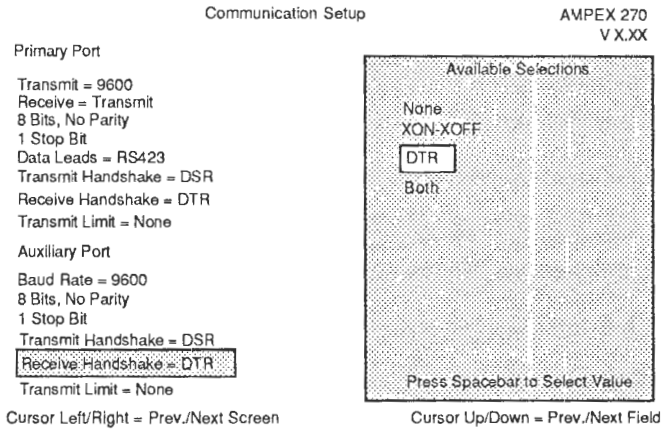
Auxiliary-Port, Transmit Protocol Setup

Transmit Handshake = DSR

Sets protocol for transmitting data to host:

Setting	Protocol
None	Neither DSR nor XON is used.
XON-XOFF	XON-XOFF only
DSR	Data Set Ready
Both	Data Set Ready and XON-XOFF.

2.2.4 Communication Mode Setup (Continued)

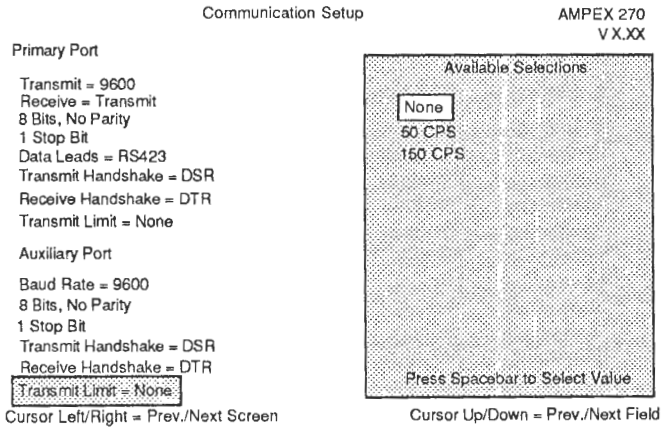


Auxiliary-Port, Receive-Protocol Setup

Receive Handshake = DTR

Sets protocol for receiving data from host:

Setting	Protocol
None	Neither DTR nor XON is used.
XON-XOFF	XON-XOFF only
DTR	Data Terminal Ready
Both	Data Terminal Ready and XON-XOFF.

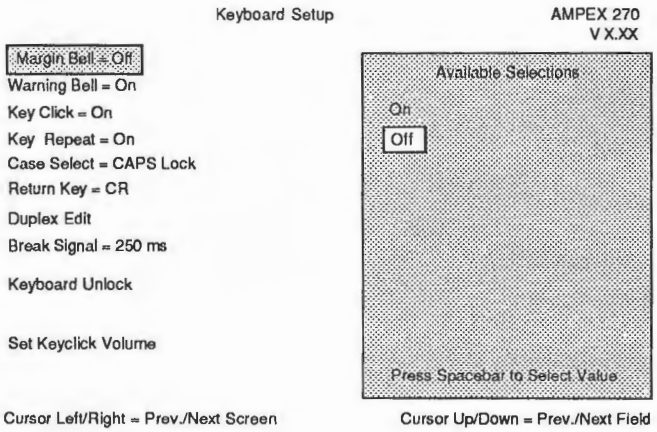


Auxiliary-Port, Transmit-Limit Setup

Transmit Limit = None

Sets limit on rate on which characters are transmitted to printer. (A limit reduces interrupt burden on host operating system.)

2.2.5 Keyboard Setup



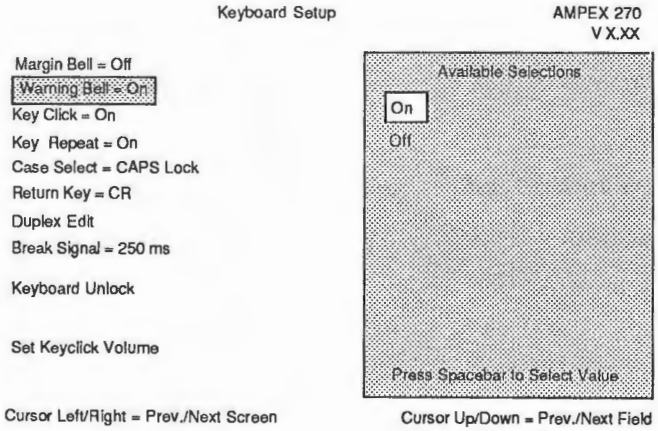
Margin-Bell Setup

Margin Bell = Off

Sets effect of cursor approaching right margin:

On: Bell sounds when cursor reaches column 72 if Columns = 80 column, column 124 if Columns = 132.

Off: No bell sound.



Warning Bell Setup

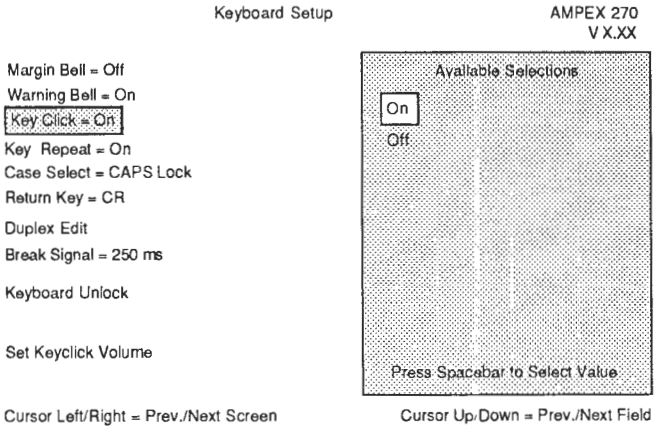
Warning Bell = On

1. In setup, pressing an inappropriate key and incorrectly setting a window causes the warning bell to beep.

2. Ctrl/G beep.

NOTE: 1 and 2 above will beep if warning bell On. However, 1 and 2 above will not beep when warning bell = Off.

2.2.5 Keyboard Setup



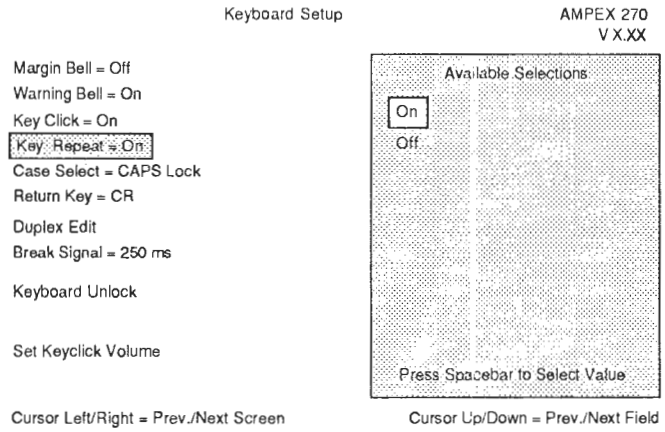
Keyclick Setup

Key Click = On

Sets clicking effect of typing a key:

On: Audible *click* sounds when key is pressed (see also *Keyclick Volume* below)

Off: No sound is made when key is pressed.



Key Repeat Setup

Key Repeat = ON

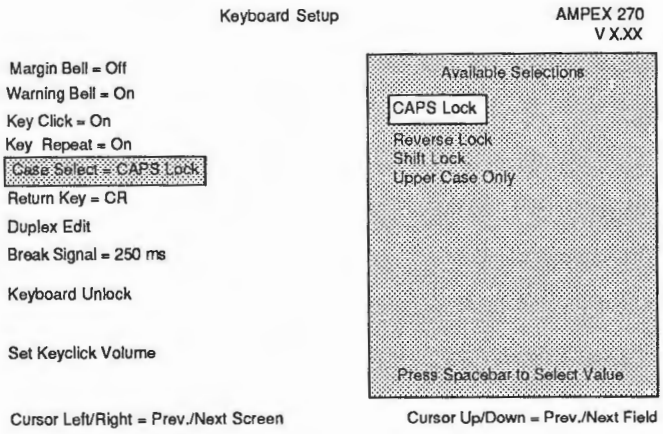
Sets effect of holding down a key:

On: Holding key displays repeat of character until key is released.

Off: Holding a key is same as typing key once; only one character results.

NOTE: The following keys never repeat: BREAK; CAPS LOCK; CLEAR/HOME; CTRL; FUNCT; LOC ESC/ESC; RESET; SHIFT

2.2.5 Keyboard Setup (Continued)



Case-Select Setup

Case Select = CAPS Lock

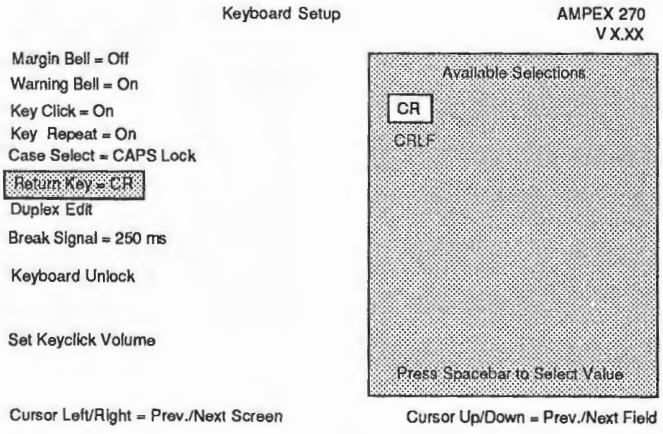
Sets effect of pressing an alphabet key at power up.

CAPS Lock: Disables SHIFT key and allows only upper case characters when *CAPS LOCK* key is pressed.

Reverse Lock: Reverses functions of SHIFT key when upper case is locked by *CAPS LOCK* key.

Shift Lock: Permits SHIFT key to turn off upper case function.

Upper Case Only: Locks keys in upper case.



Return Key Setup

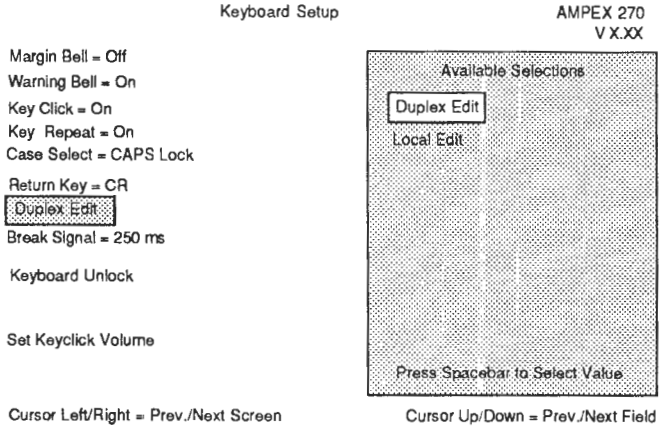
Return Key = CR

Sets terminal's response to a typed carriage return.

CR: Moves cursor to column 1 of the same line.

CRLF: Moves cursor to column 1 of the next line.

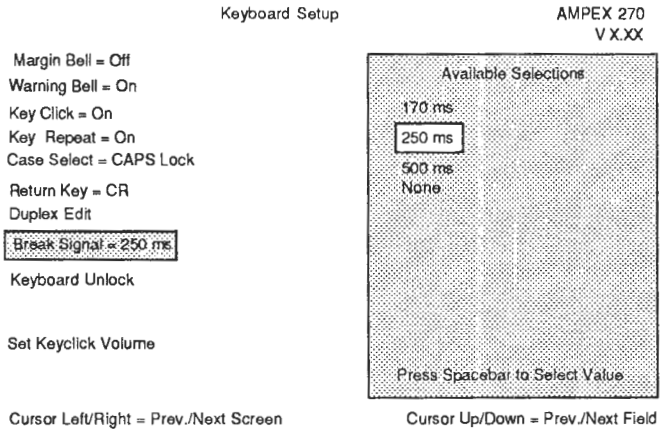
2.2.5 Keyboard Setup (Continued)



Edit Select Setup

Duplex Edit

Sets whether or not certain edit key codes are transmitted to host (applies only if terminal is set to *Conversational* and *Full Duplex* (screen 1). *Duplex* codes are transmitted. *Local* codes are not transmitted.

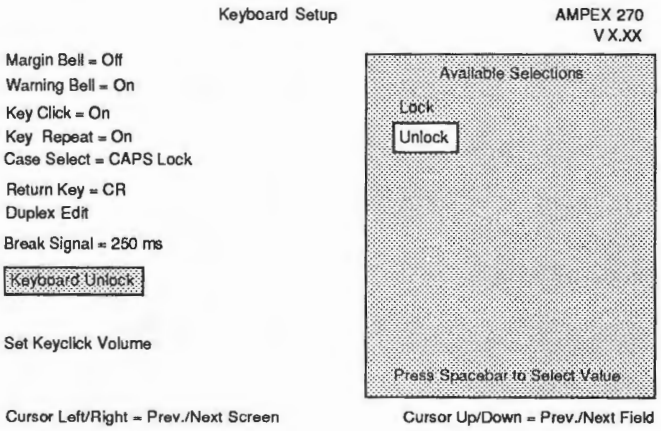


Break-Signal Duration Setup

Break Signal = 250 mS

Sets duration of BREAK signal sent to host.

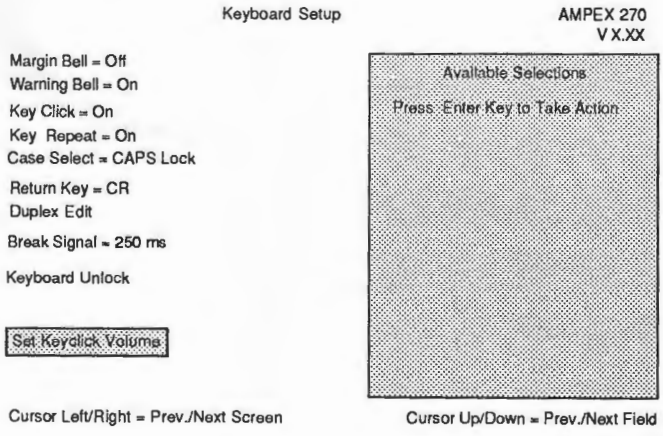
2.2.5 Keyboard Setup (Continued)



Keyboard-Lock Setup

Keyboard Unlock

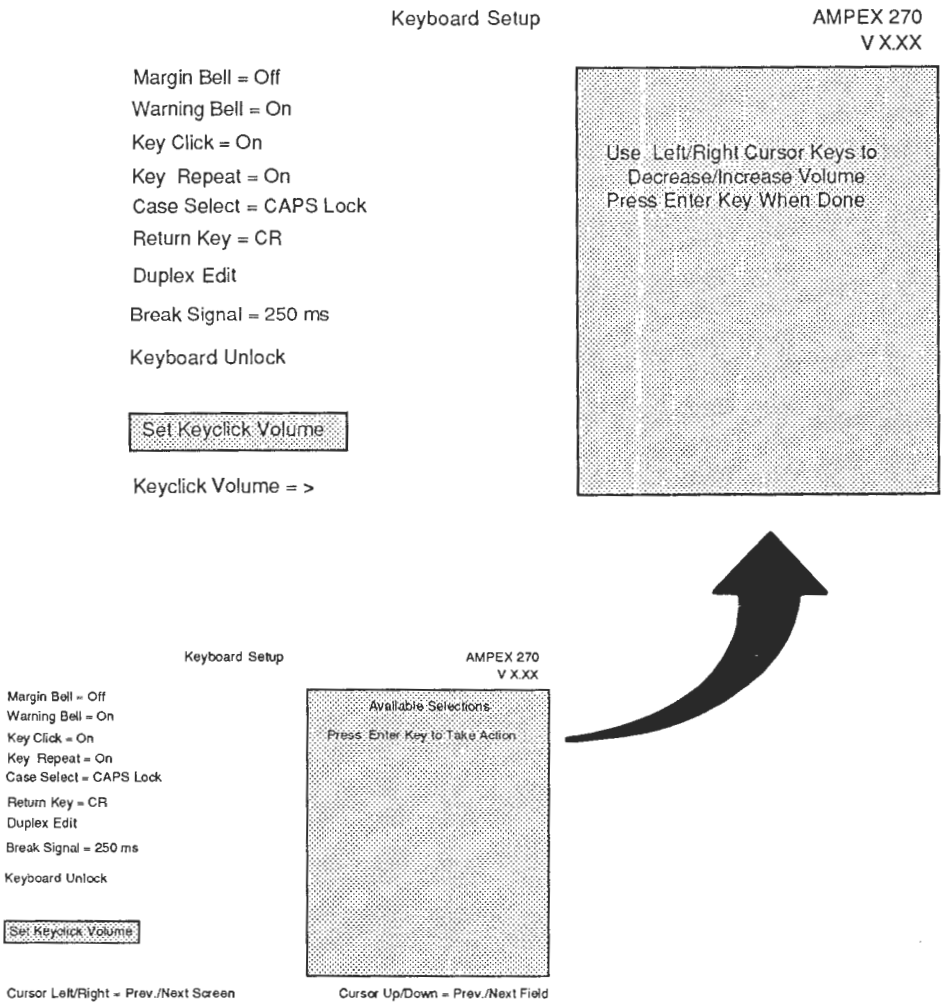
Locks/unlocks the keyboard. Locking the keyboard prevents inadvertant data entry via the keyboard.



Keyclick-Volume Setup

Set Keyclick Volume

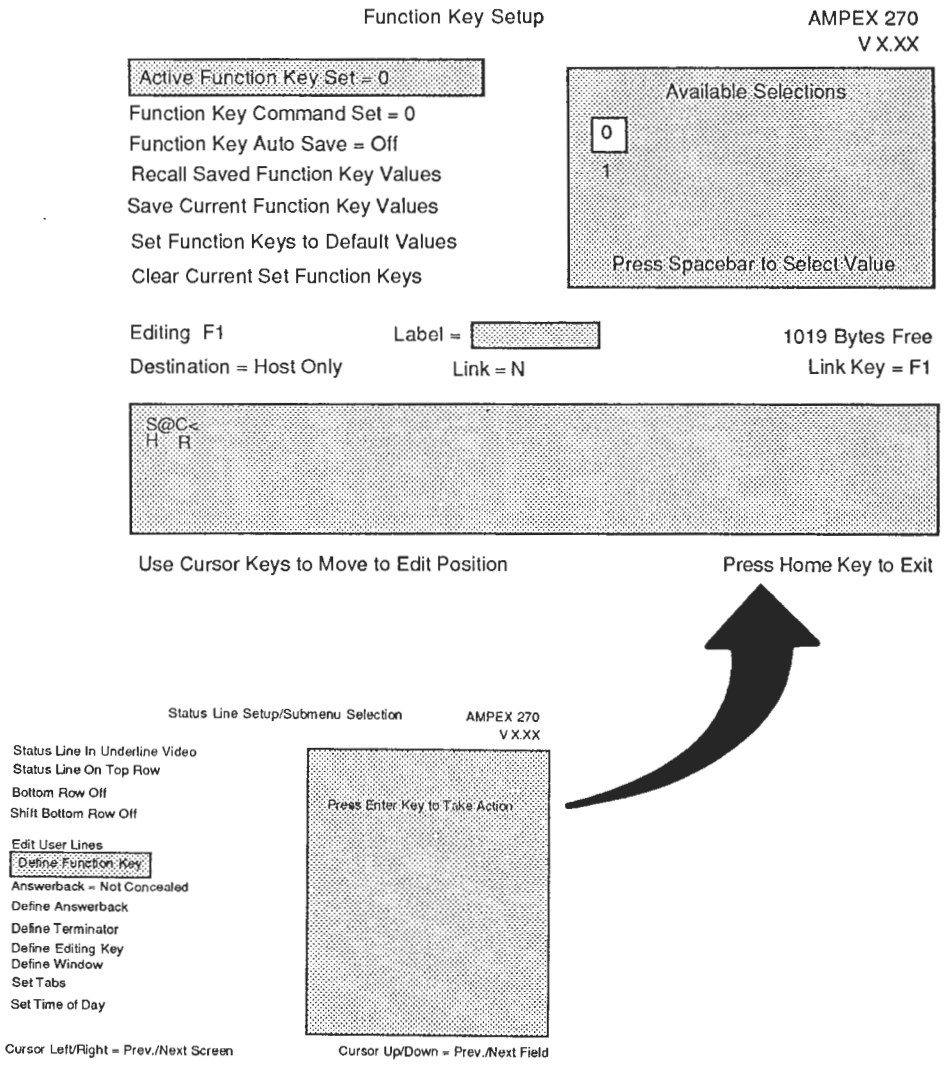
Sets volume of keyclick.



Press right arrow to increase volume; press left arrow to decrease volume.

Keyclick-Volume, Submenu Setup

2.2.6 Define Function Key Submenu Setup



Active Function Key, Submenu Setup

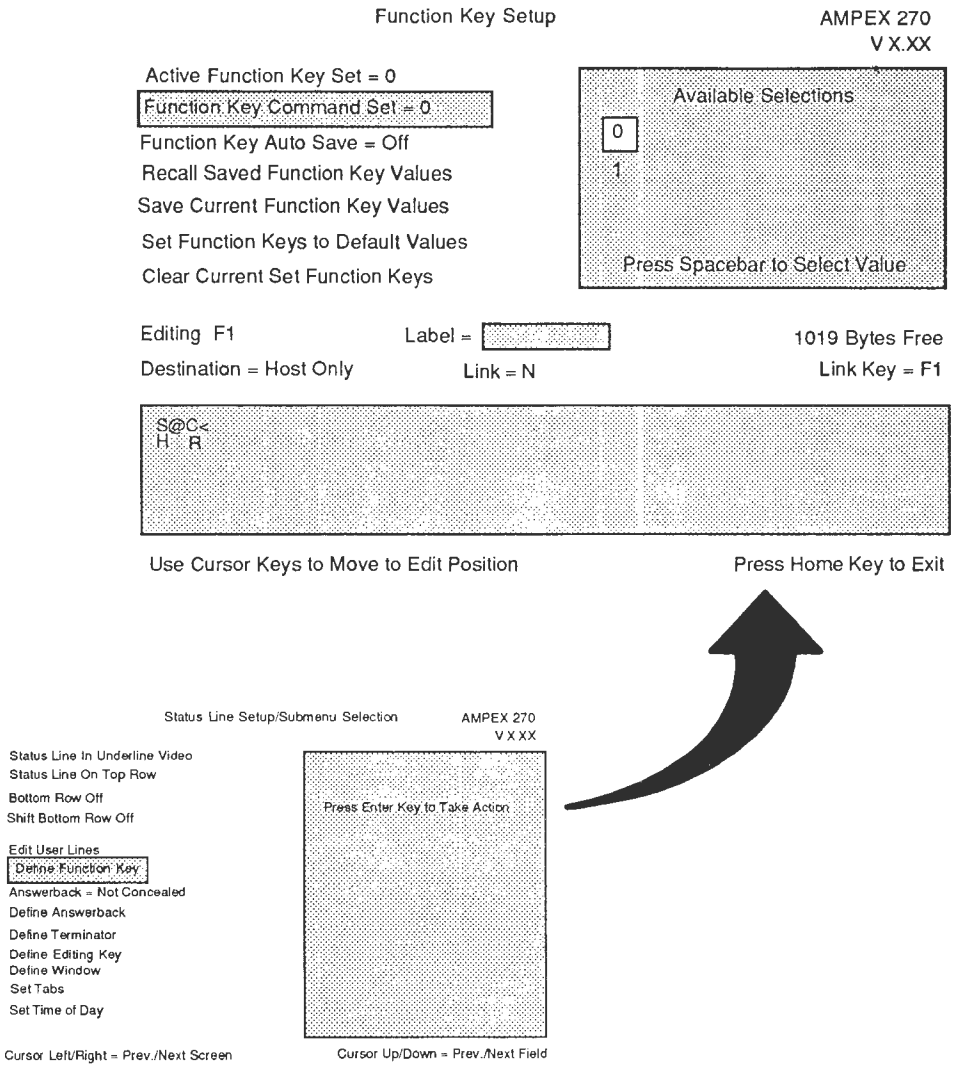
Active Function Key Set = 0

Function key set 0 and 1

The default value of set 0 is shown in Table 3-7.

The default value of set 1 is null.

2.2.6 Define Function Key Submenu Setup (Continued)

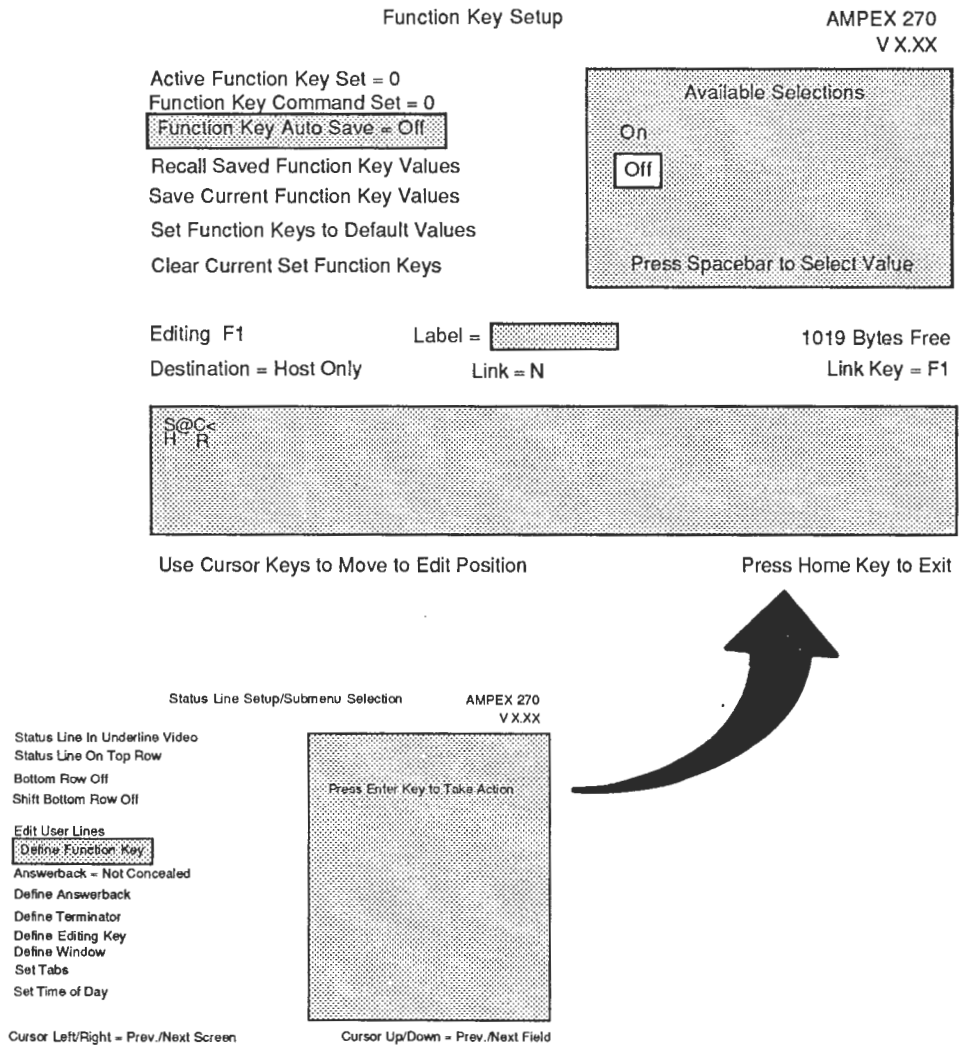


Function Key Command Set, Submenu Setup

Function Key Command Set = 0 (See Table 3-8)

Use different function key command set to program function key.

2.2.6 Define Function Key Submenu Setup (Continued)

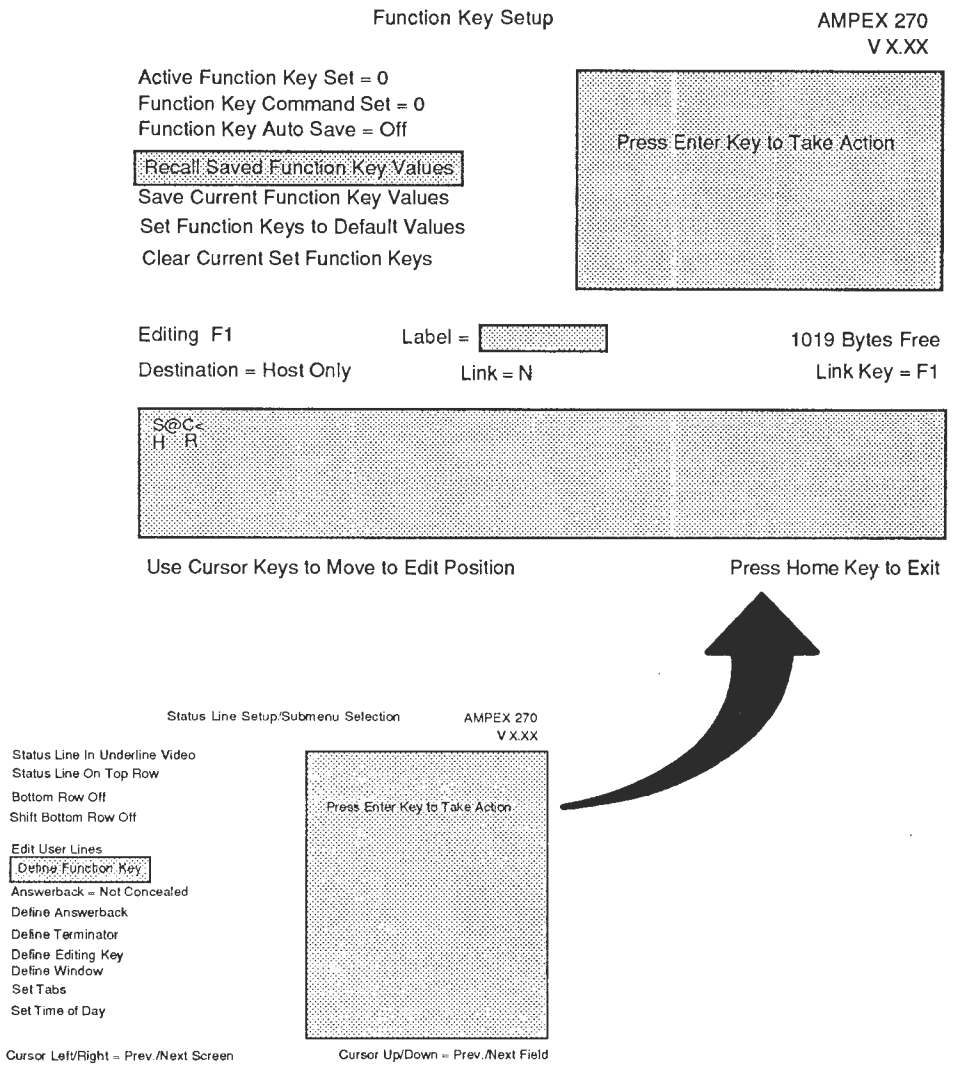


Function Key Auto Save, Submenu Setup

Function Key Auto Save = Off

Automatically saves function key values after power-off.

2.2.6 Define Function Key Submenu Setup (Continued)

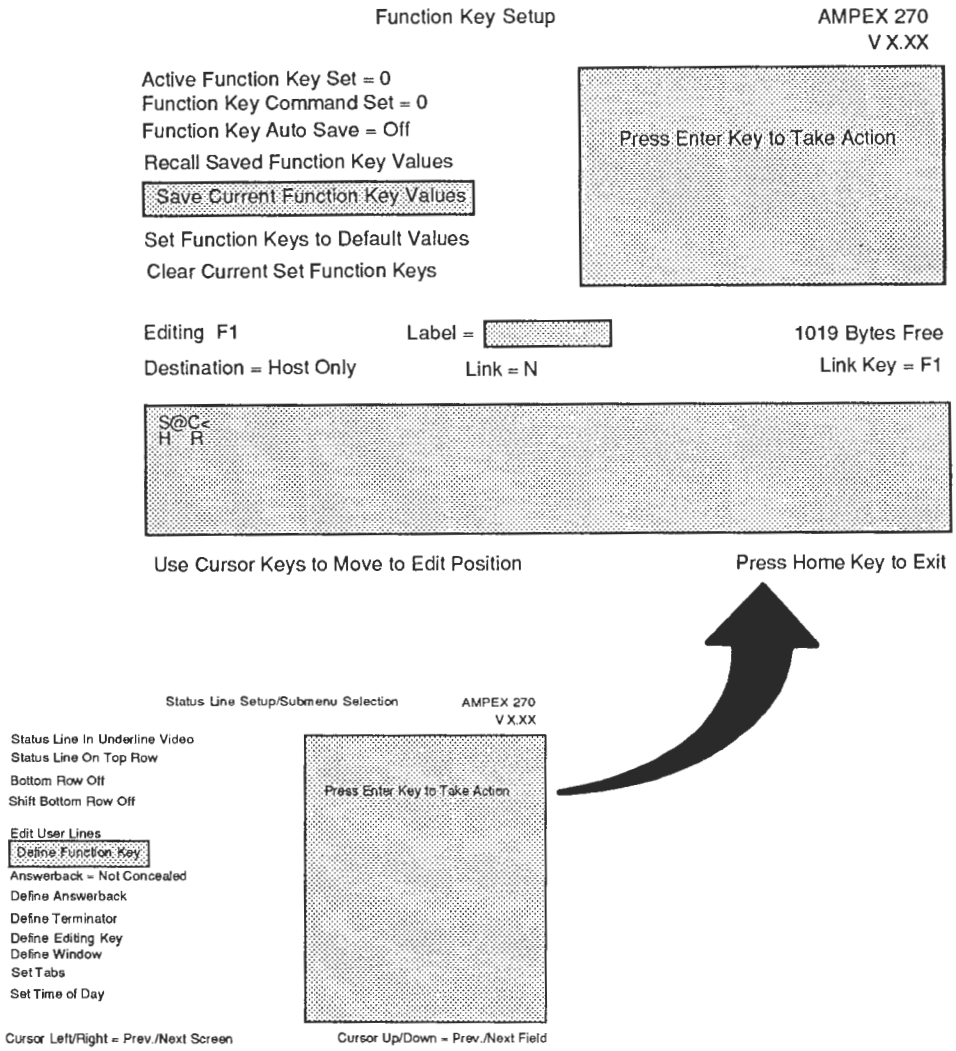


Function Key Restore, Submenu Setup

Recall Saved Function Key Values

Press ENTER to restore function keys to their last-saved values.

2.2.6 Define Function Key Submenu Setup (Continued)

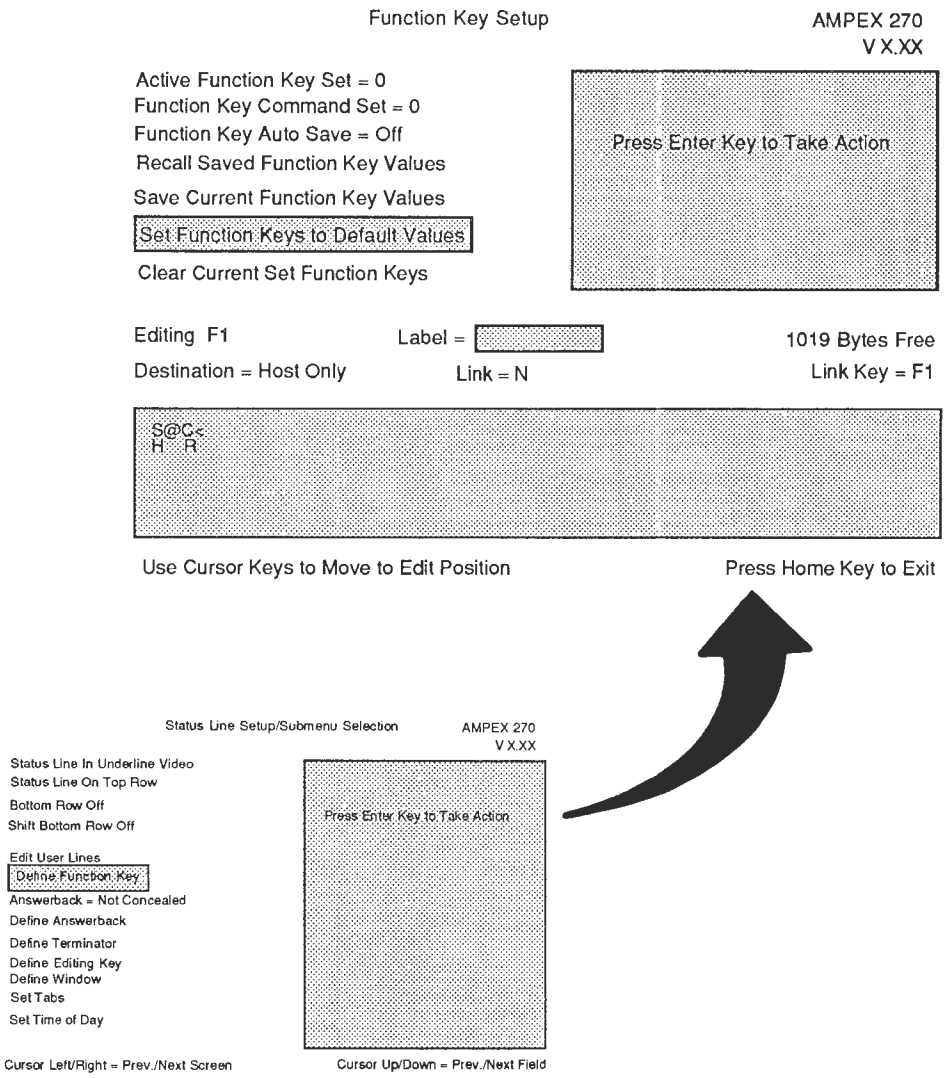


Save Function Key, Submenu Setup

Save Current Function Key Values

Press ENTER to save the current value of each function key. NOTE: If you do not save the current values, the set will be lost when the terminal is turned off. When the terminal is turned on again, each function key assumes its last-saved value.

2.2.6 Define Function Key Submenu Setup (Continued)

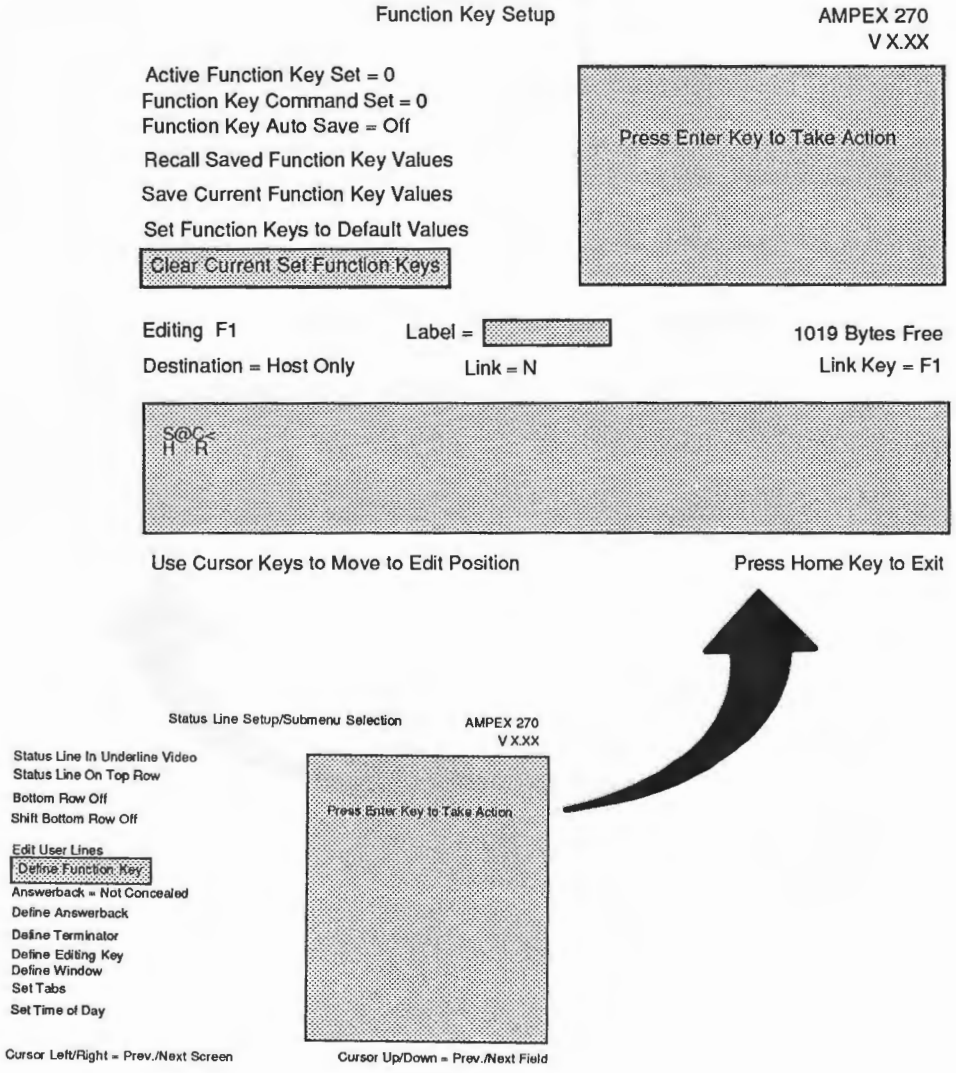


Function Key Default, Submenu Setup

Set Function Keys to Default Values

Press ENTER to restore the function keys to their default values.

2.2.6 Define Function Key Submenu Setup (Continued)

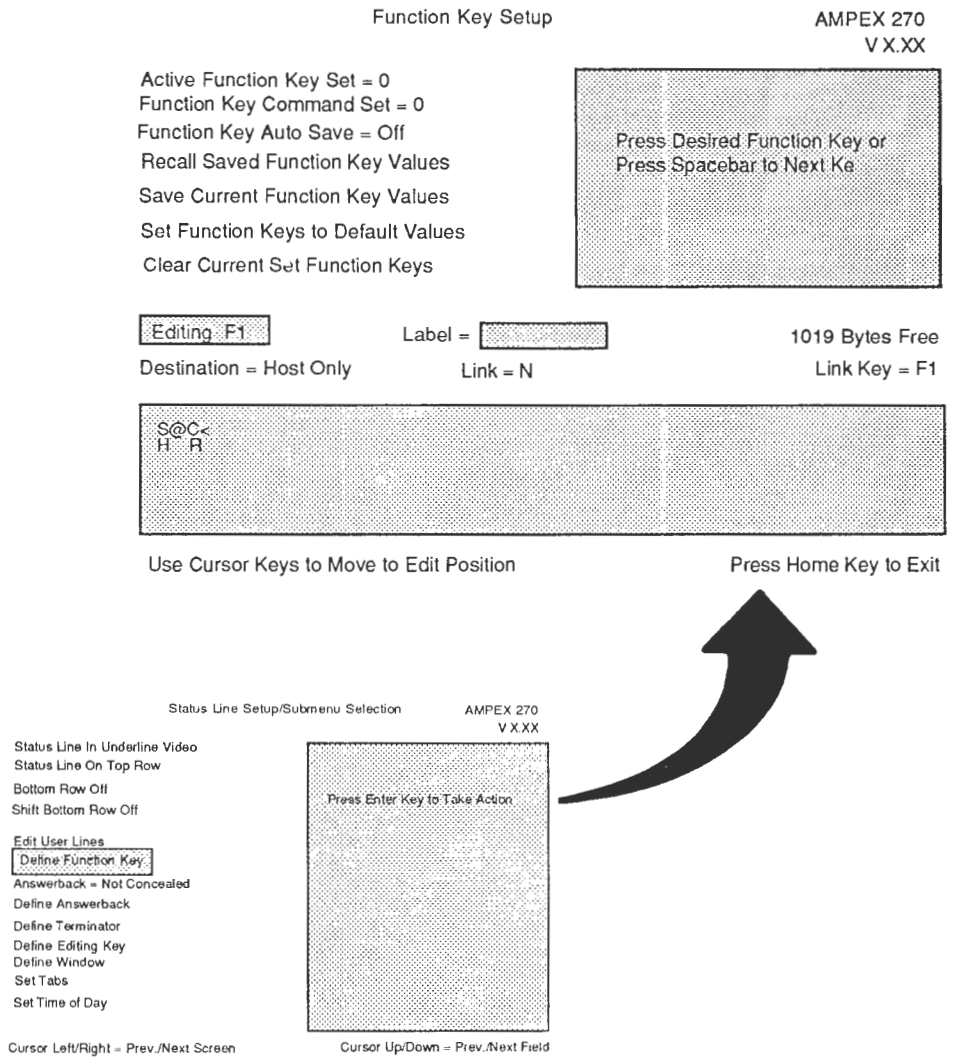


Clear Function Keys, Submenu Setup

Clear Current Set Function Keys

Press ENTER to clear the current values of all function keys.

2.2.6 Define Function Key Submenu Setup (Continued)

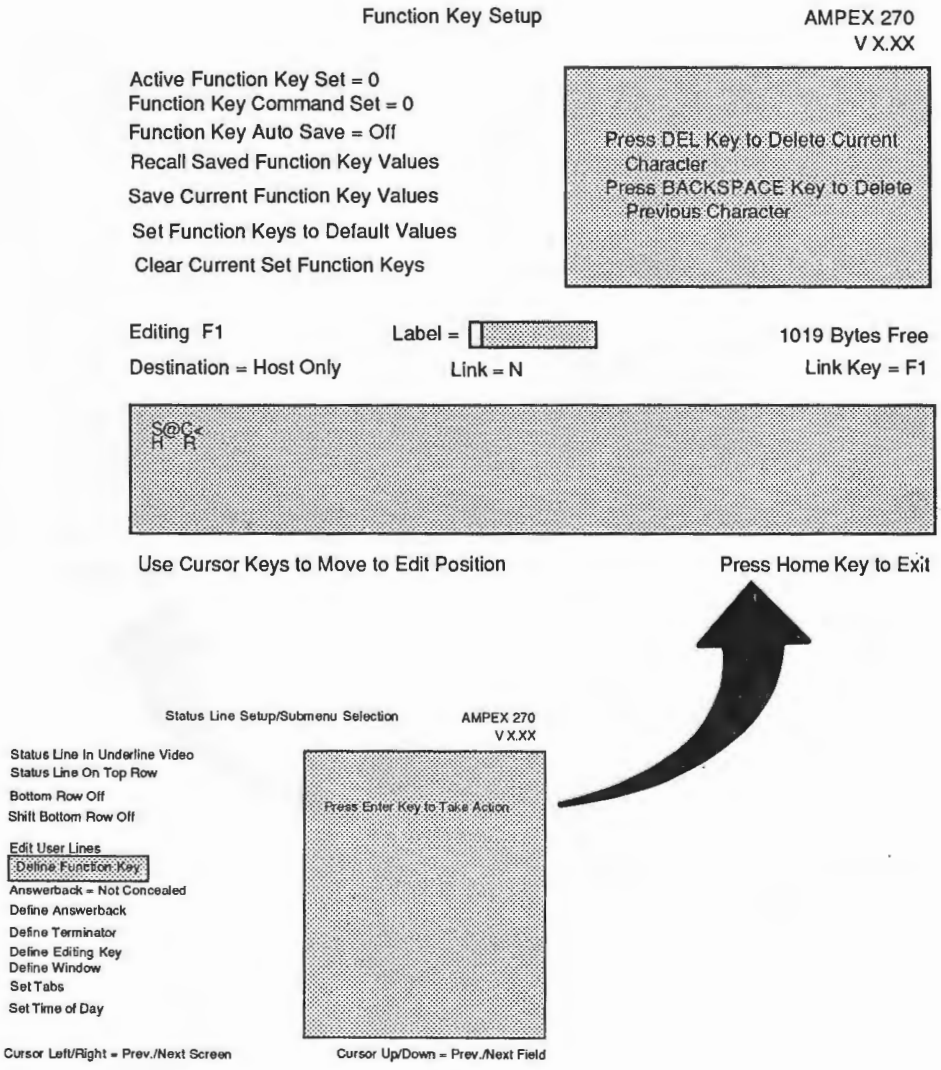


Function Key Select for Edit, Submenu Setup

Editing F1

Press the Fn or Shift/Fn key whose features you wish to change; change label, change destination, change linking status, change linked key, edit contents of key.

2.2.6 Define Function Key Submenu Setup (Continued)

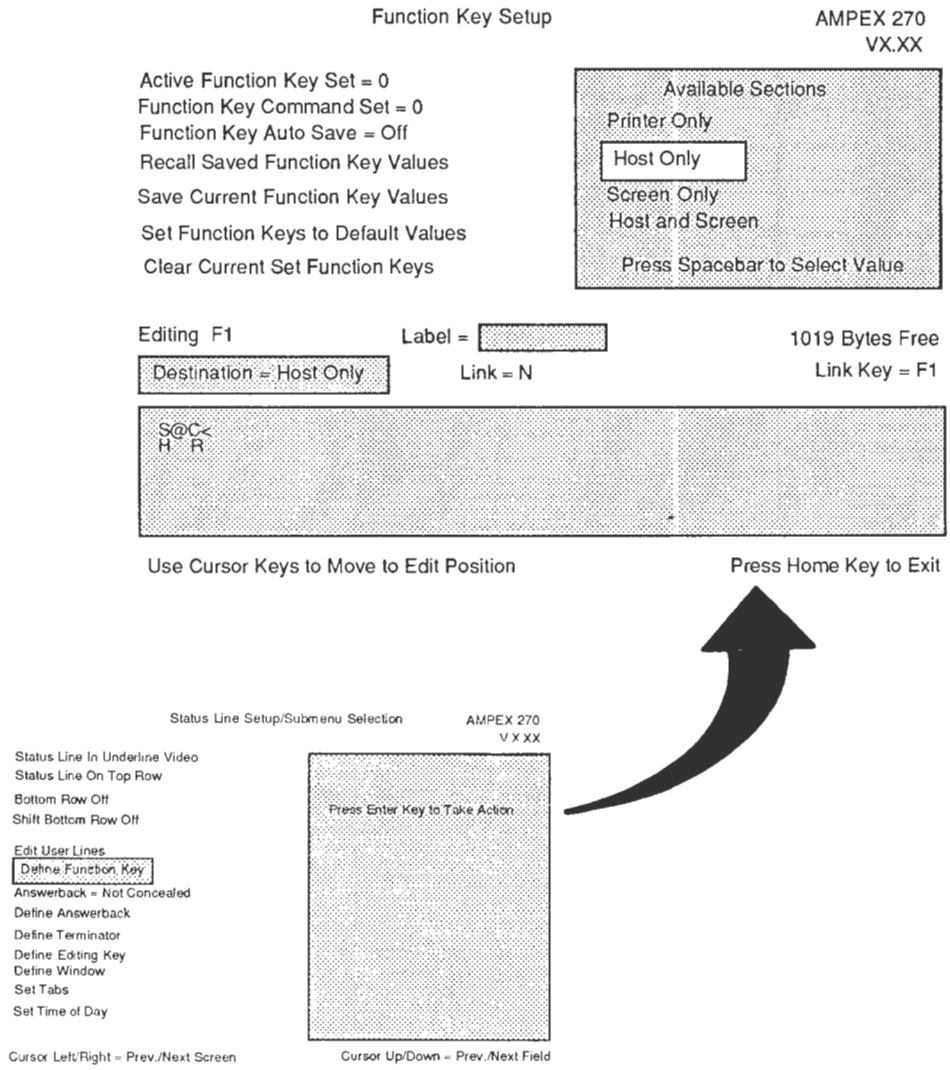


Function Key Label, Submenu Setup

Label =

Type in desired label for the selected function key. The label may be displayed on the Bottom Row of the screen (setup screen 3)

2.2.6 Define Function Key Submenu Setup (Continued)

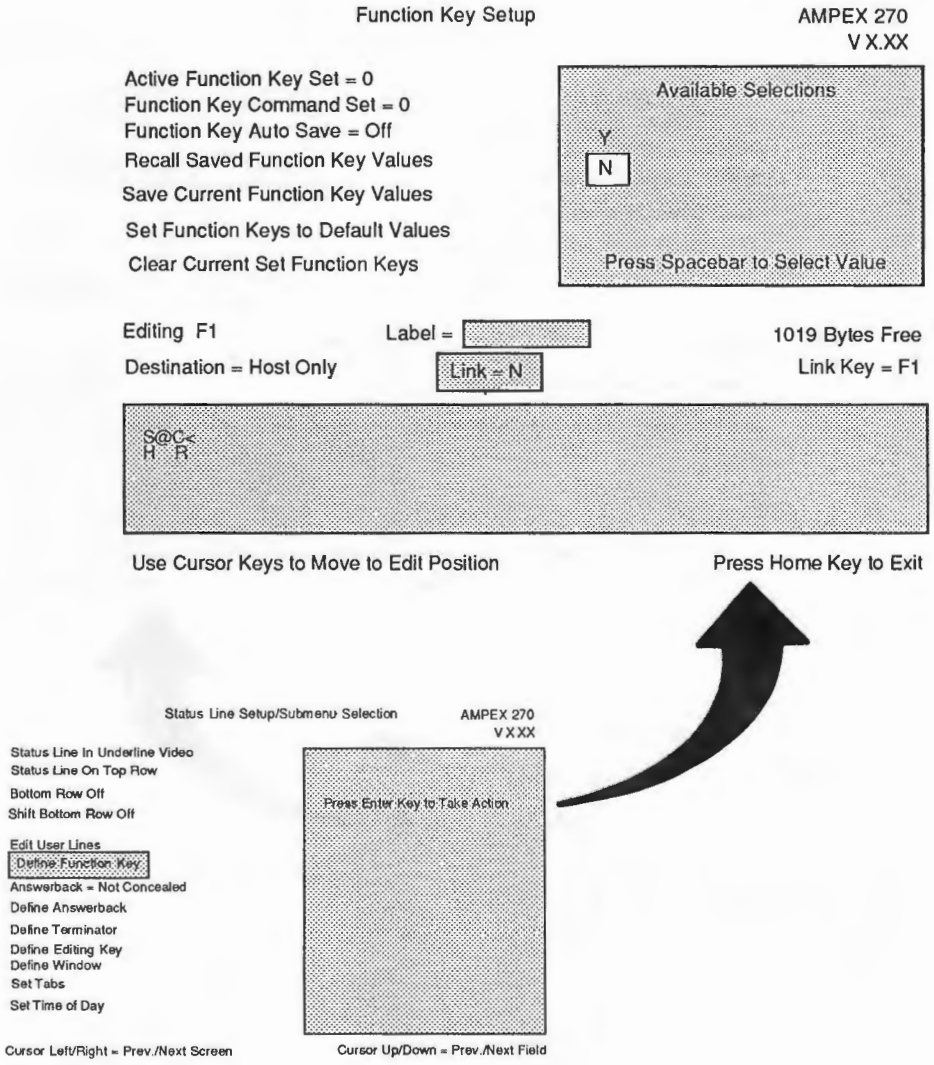


Function Key Destination, Submenu Setup

Destination = Host Only

Determines where the sequence is sent when the selected function key is pressed.

2.2.6 Define Function Key Submenu Setup (Continued)

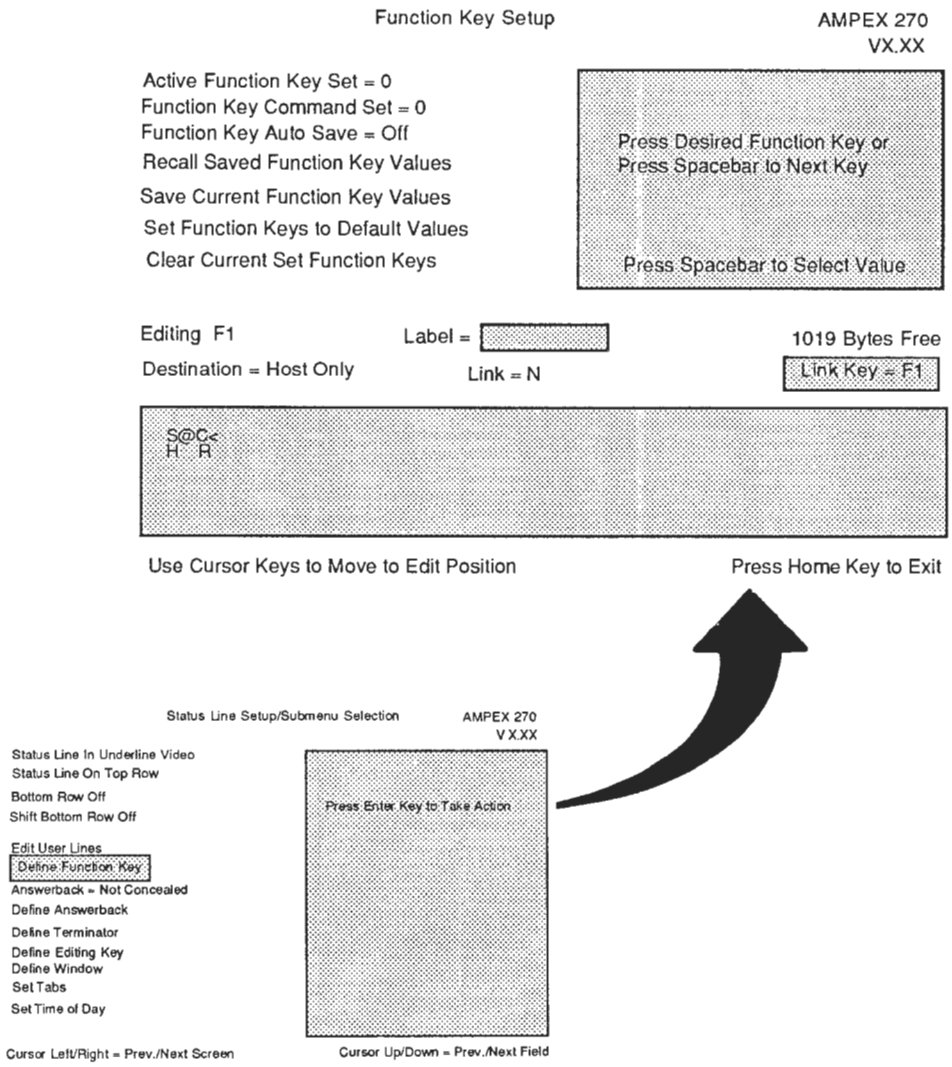


Function Key Link, Submenu Setup

Link = N

Sets whether or not to link execution of the selected function key's command with another function key. (See Linking Function Keys in Section III.)

2.2.6 Define Function Key Submenu Setup (Continued)

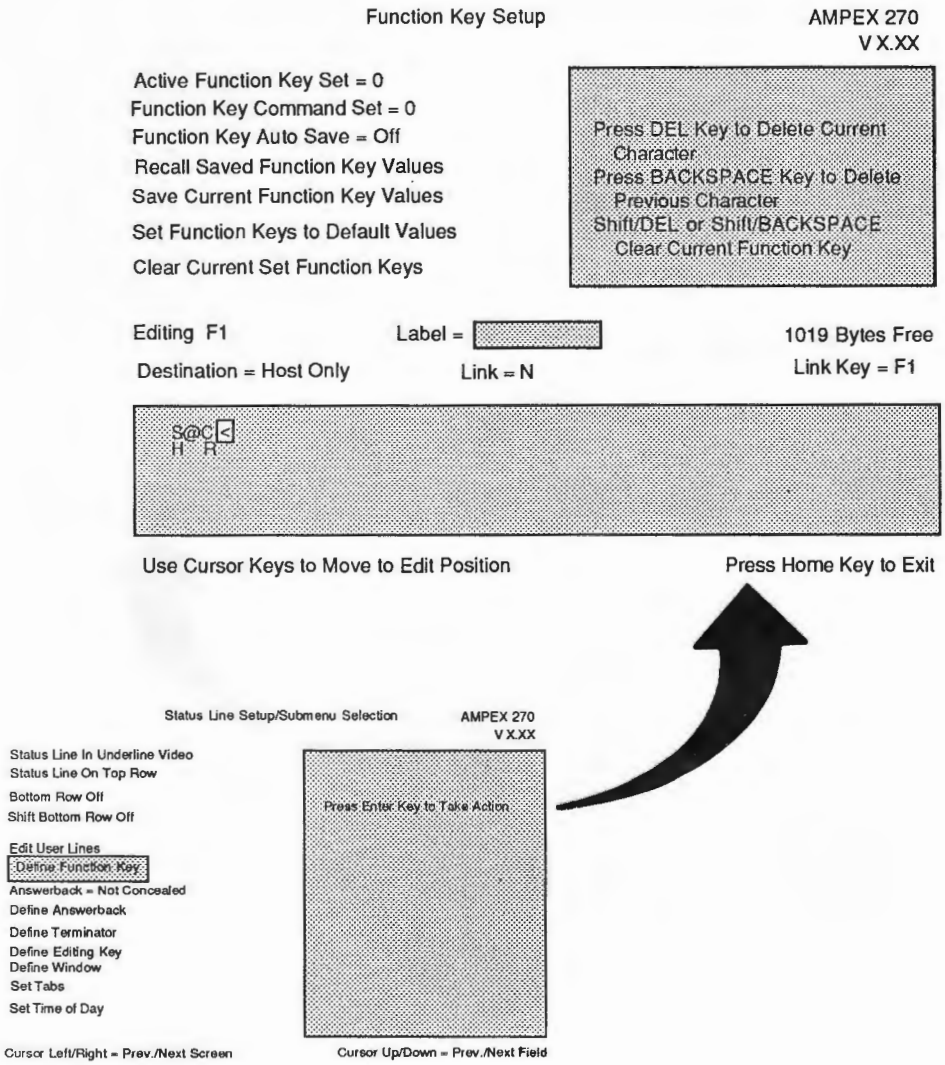


Link Key, Submenu Setup

Link Key = F1

Edit the contents of selected function key. Type in desired contents.

2.2.6 Define Function Key Submenu Setup (Continued)

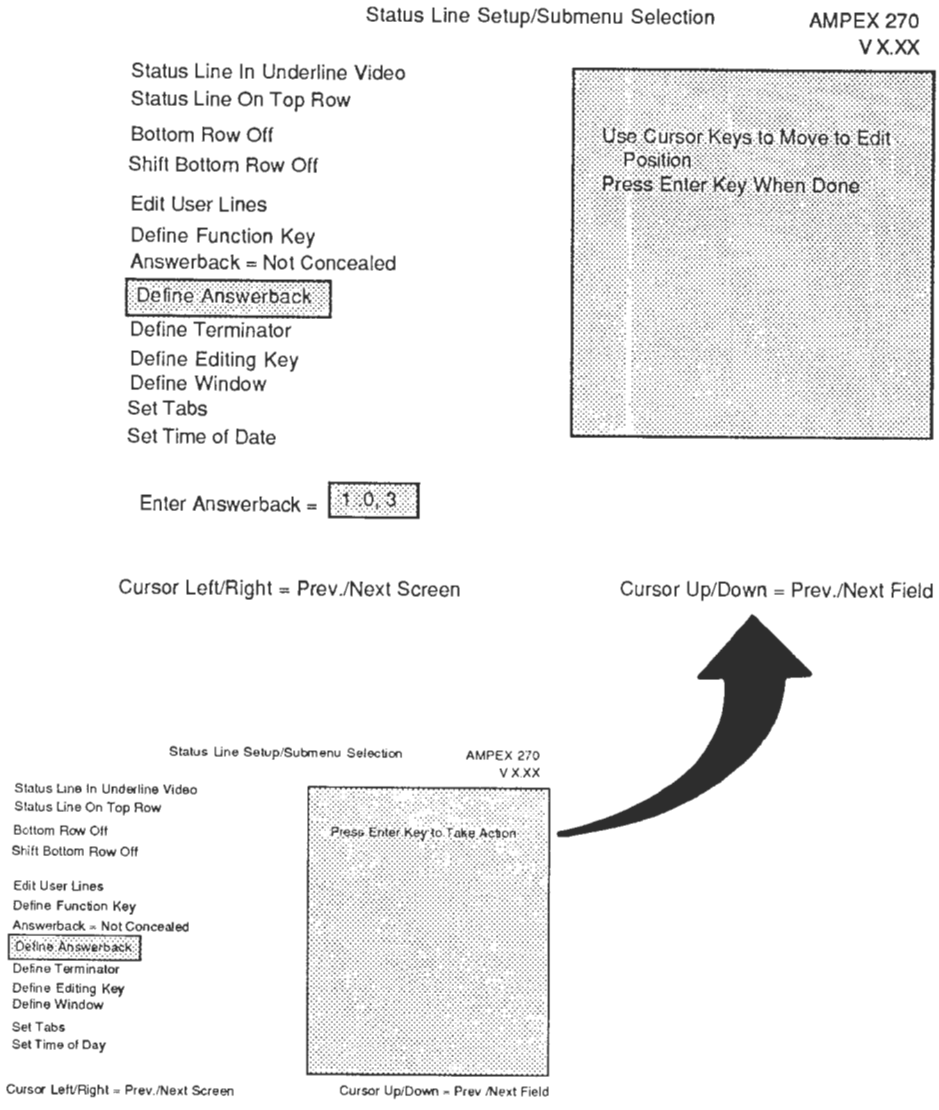

Function Key Setup
AMPEX 270
V X.XX
Active Function Key Set = 0
Function Key Command Set = 0
Function Key Auto Save = Off
Recall Saved Function Key Values
Save Current Function Key Values
Set Function Keys to Default Values
Clear Current Set Function Keys
Press DEL Key to Delete Current Character
Press BACKSPACE Key to Delete Previous Character
Shift/DEL or Shift/BACKSPACE Clear Current Function Key
Editing F1
Label =
1019 Bytes Free
Destination = Host Only
Link = N
Link Key = F1
Use Cursor Keys to Move to Edit Position
Press Home Key to Exit
Status Line Setup/Submenu Selection
AMPEX 270
V X.XX
Status Line In Underline Video
Status Line On Top Row
Bottom Row Off
Shift Bottom Row Off
Edit User Lines
Define Function Key
Answerback = Not Concealed
Define Answerback
Define Terminator
Define Editing Key
Define Window
Set Tabs
Set Time of Day
Press Enter Key to Take Action
Cursor Left/Right = Prev./Next Screen
Cursor Up/Down = Prev./Next Field

Define Function Key, Submenu Setup

Key Data Field

Field of 1019 bytes for insertion of data assigned to selected function key.

2.2.7 Define Answerback



Define Answerback, Submenu Setup

Define Answerback

A 20-character field for ANSWERBACK message to host, identifying a particular terminal to the host. First and last characters serve as delimiters (not transmitted) and must be the same. Default message is X.X, n. X.X. denotes the firmware version; "n" denotes the number of pages set up in screen memory (0 means one page, 1 means two pages, and so on.)

2.2.8 Terminator Setup

AMPEX 270
V X.XX

Terminator Setup

Protected Field = F_S

End of Line = U_S

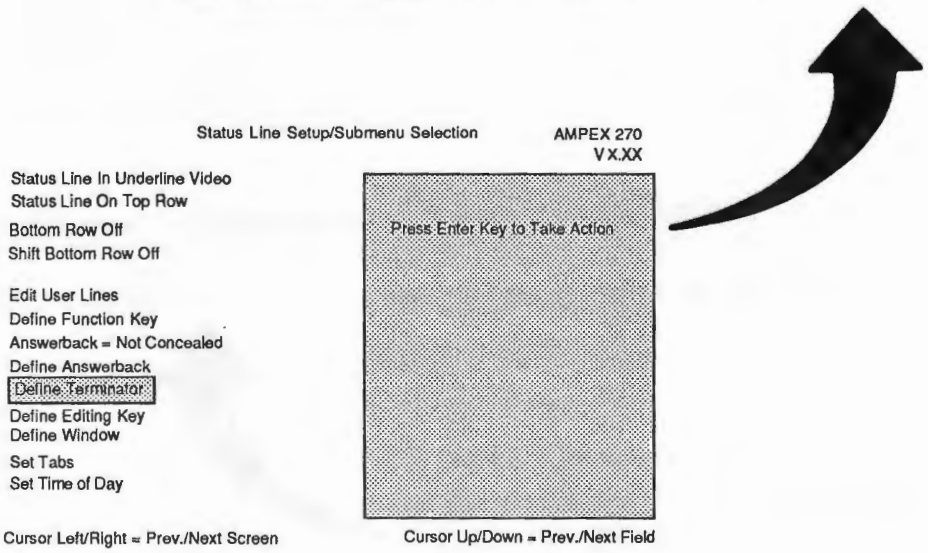
Start of Protected Field = E_C)

End of Protected Field = E_C(

End of Message = C_R

Use Up/Down Cursor Keys to Move to Edit Position

Press Home to Key to Exit



Terminator, Submenu Setup

Field = FS

Sets characters sent in place of protected field, when protected fields are not transmitted. Type in desired characters. Any two characters acceptable; default is FS (field separator) = 1C (hex).

End of Line = US

Set to match host's end of line terminator. Type in desired characters. Any two characters acceptable; default is US (unit separator) = 1F (hex).

Start of Protected Field = EC)

Sets characters sent denoting start of protected field, when protected fields are transmitted. Type in desired characters. Any two characters acceptable; default is E(s)C).

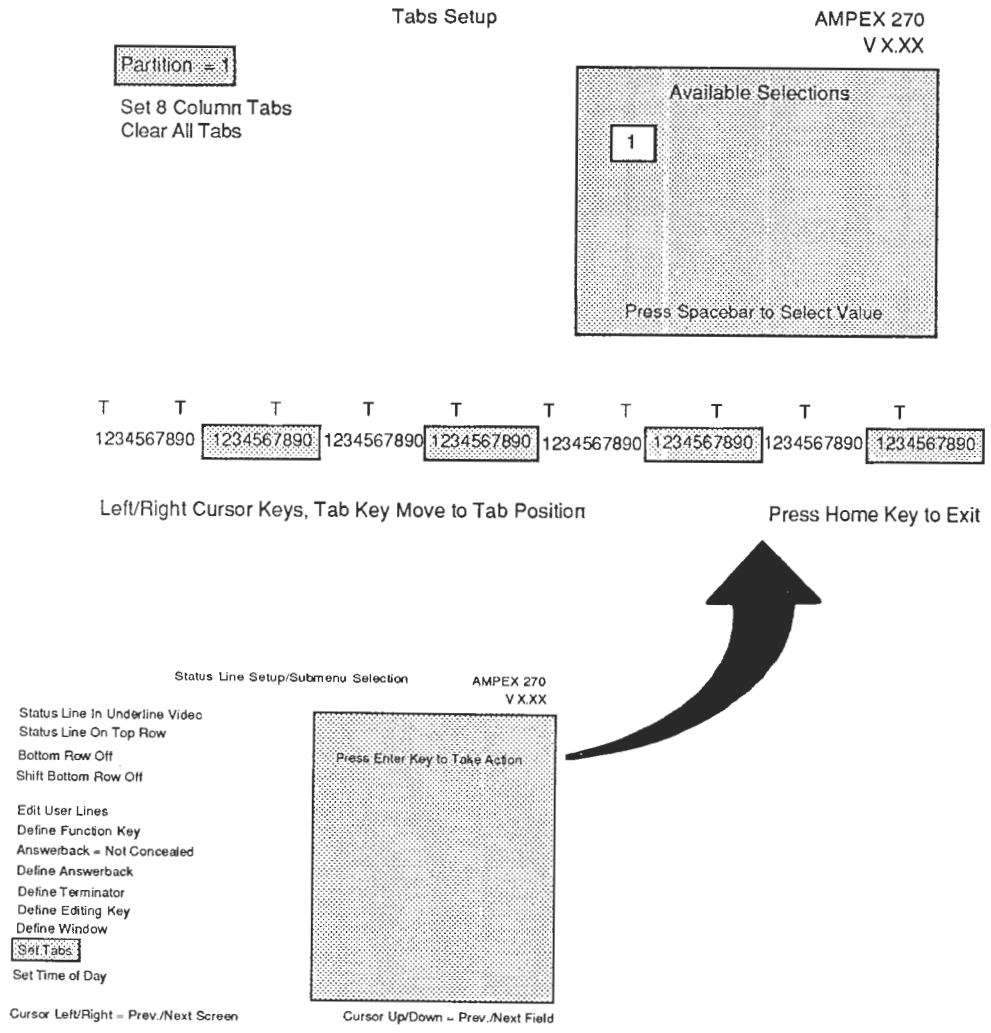
End of Protected Field = EC(

Sets characters sent denoting end of protected field, when protected fields are transmitted. Type in desired characters. Any two characters acceptable; default is E(s)C(.

End of Message = CR

Set to match Host's End of Message terminator. Type in desired characters. Any two characters acceptable; default is CTRL/M (carriage return).

2.2.9 Tab Stop Setup

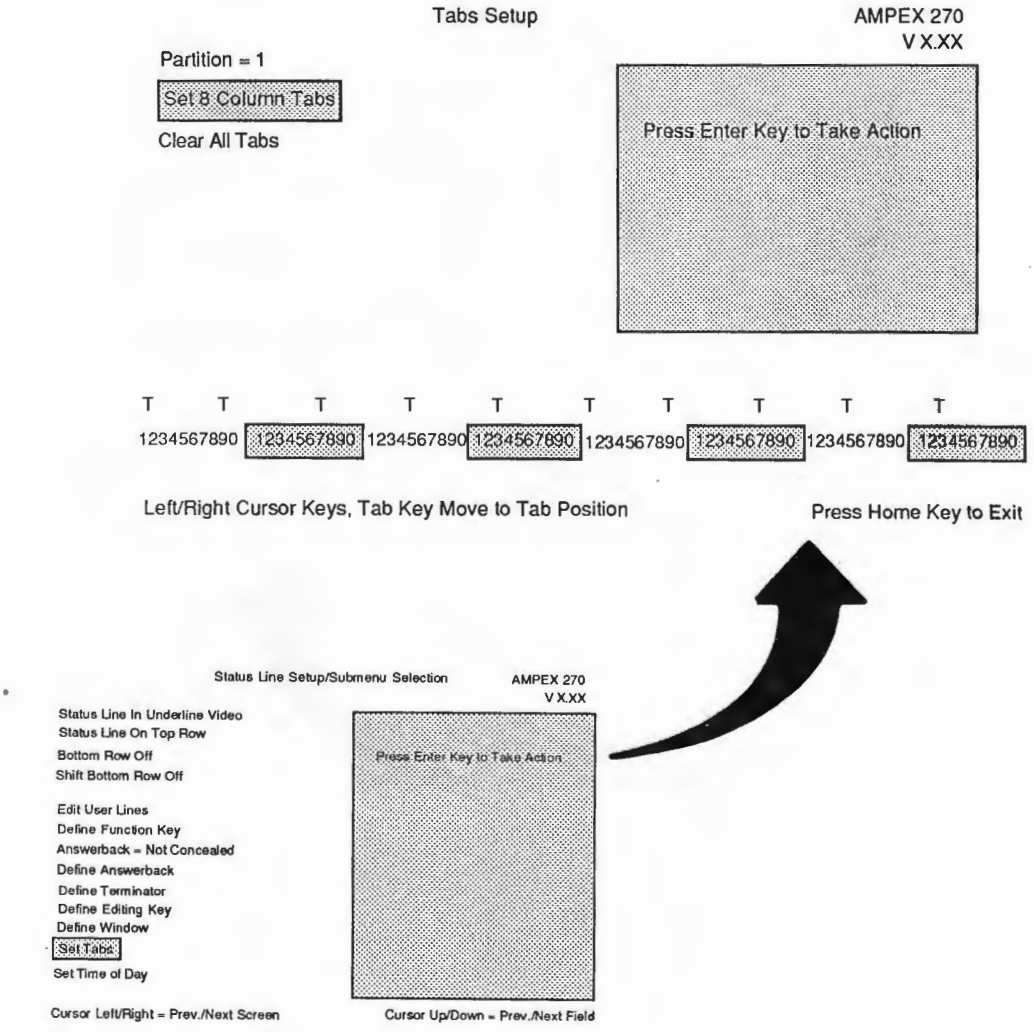


Tab Partition Select, Submenu Setup

Partition = 1

Selects the partition (depends on window configuration) in which to set tabs.

2.2.9 Tab Stop Setup (Continued)

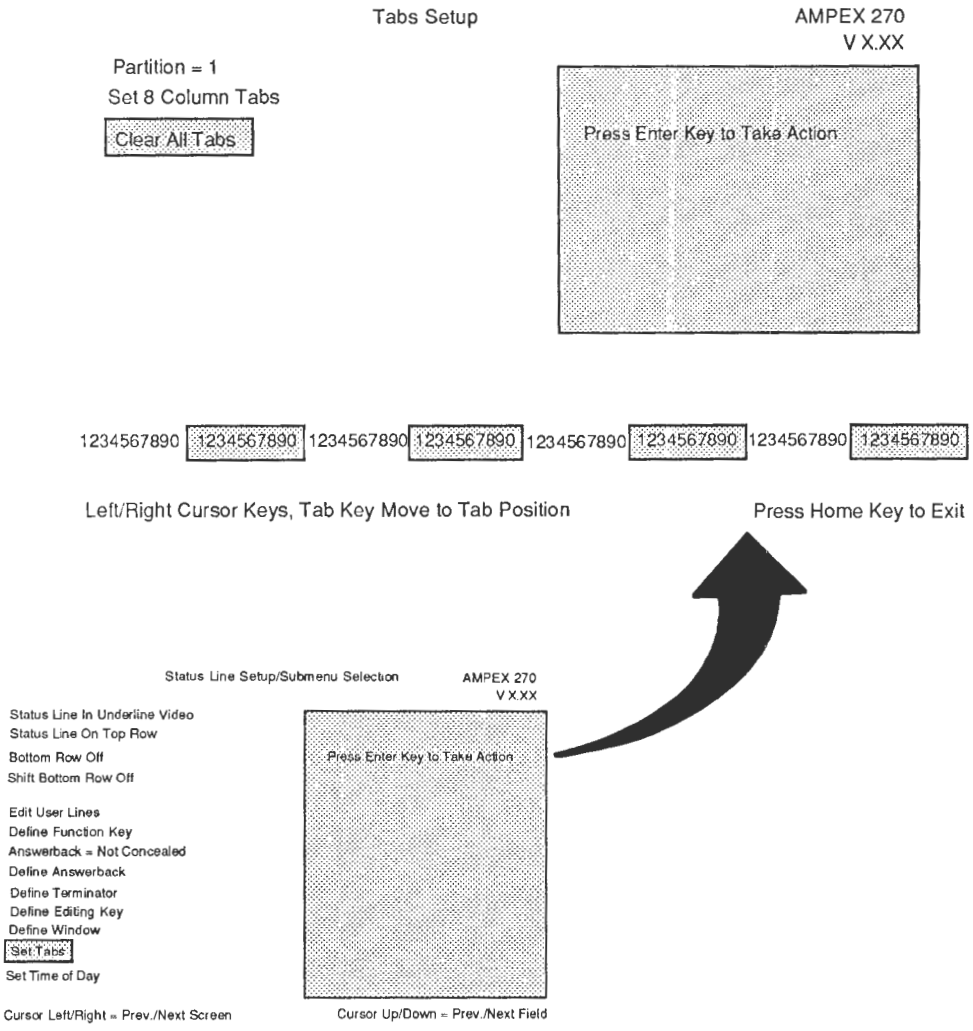

Tabs Setup
AMPEX 270
V X.XX
Partition = 1
Set 8 Column Tabs
Clear All Tabs
Press Enter Key to Take Action
T T T T T T T T T T
1234567890 1234567890 1234567890 1234567890 1234567890 1234567890 1234567890 1234567890
Left/Right Cursor Keys, Tab Key Move to Tab Position
Press Home Key to Exit
Status Line Setup/Submenu Selection
AMPEX 270
V X.XX
Status Line In Underline Video
Status Line On Top Row
Bottom Row Off
Shift Bottom Row Off
Edit User Lines
Define Function Key
Answerback = Not Concealed
Define Answerback
Define Terminator
Define Editing Key
Define Window
Set Tabs
Set Time of Day
Press Enter Key to Take Action
Cursor Left/Right = Prev./Next Screen
Cursor Up/Down = Prev./Next Field

Eight-Column Tab, Submenu Setup

Set 8 Column Tabs

Press ENTER to automatically set tabs every 8 columns beginning in column 1.

2.2.9 Tab Stop Setup (Continued)

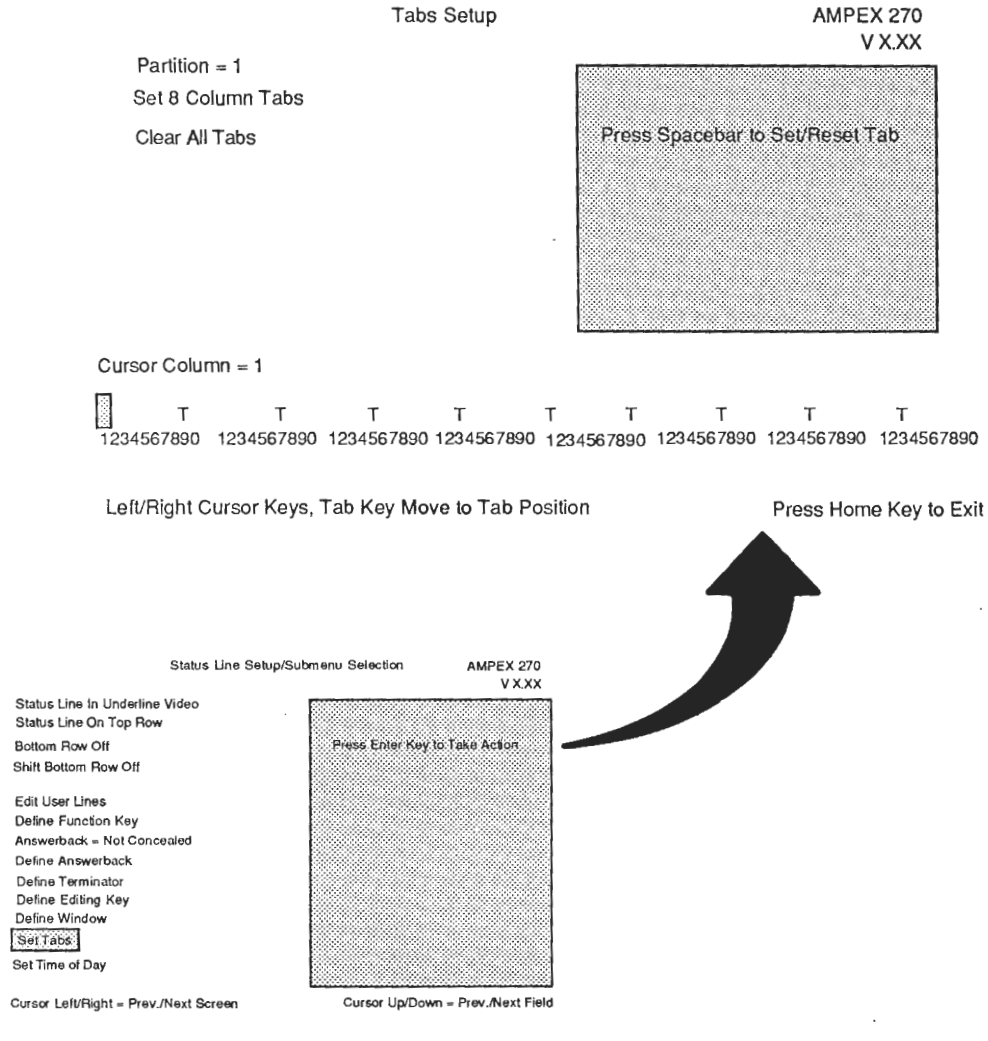


Tab All-Clear, Submenu Setup

Clear All Tabs

Press ENTER to clear all tab stops.

2.2.9 Tab Stop Setup (Continued)



Tab Select/Clear, Submenu Setup

{Tab Line}

Use the following procedure to set/clear individual tabs. (Note: cursor position is indicated above tab line.)

To set a tab stop:

1. Move cursor to desired column.
2. Press spacebar. A "T" appears in the column.

To clear an existing tab stop.

1. Move cursor to appropriate stop.
2. Press spacebar. The "T" disappears from column

SECTION III
OPERATING AND PROGRAMMING THE TERMINAL

INTRODUCTION

This section explains how to operate and program the *Ampex 270* terminal using its native characteristics; i.e., when it is not emulating another terminal. Emulating another terminal is discussed in Section IV.

3.1 OPERATING MODES

The *Ampex 270* terminal has basically three data entry modes (i.e., operating modes) two of these allow communication between the terminal and a host computer. (Reference paragraph 2.2.1.) The desired operating mode may be chosen while in Set-Up or by entering the appropriate escape code (see below).

Table 3-1. Data Entry Mode Escape Codes

Data Entry Mode	Escape Code
Conversation	ESC C
Block	ESC B
Local	

Table 3-2. Description of Data Entry Modes

Data Entry Mode	Description
Conversation	Data entered via the keyboard is transmitted immediately to the host. Its appearance on the screen depends on whether or not echoing is in effect (see "Communications Mode" below). Editing commands codes are transmitted to the host, interpreted and acted upon, with the results displayed on the screen. Printing may be either executed via the host or initiated from the keyboard.
Block	Data entered via the keyboard is displayed immediately but is not transmitted to the host until a SEND command is given. Editing is "local": editing commands are interpreted and acted upon by the terminal. Printing may be either executed via the host or initiated from the keyboard.
Local	Data entered via the keyboard is displayed immediately and is never transmitted to the host. Editing is "on-screen": editing commands are interpreted and acted upon by the terminal. Printing is initiated only from the keyboard.

3.1.1 Communications Mode

Proper display of data on the terminal screen depends in part on the communications setup of the host computer. In particular, host computers may or may not send back ("echo") for display on the terminal's screen data entered via the keyboard and transmitted to the host. If the host does not echo, then the terminal must transmit both to the host and to the screen.

Proper display then depends on choosing the right "communication mode" for the terminal.

If the host is set to echo data,

> In Set-Up, (Figure 2-1), set the Communication Mode to Full Duplex, or
> Enter the sequence **ESC D F**

If the host is set to not echo data,

> In Set-Up, (Figure 2-1), set the Communication Mode to Half Duplex, or
> Enter the sequence **ESC D H**

Editing and the Communications Mode

Most of the time (e.g., using a word processing program), editing will be done while in *Full Duplex, Conversation* and Duplex Edit mode. In this situation, the editing and cursor-moving keys are transmitted to the host and echoed back to the screen. [NOTE: if an application program cannot interpret the code transmitted by the key, the command will usually be ignored. NOTE also: You can program a key so that it transmits a code the application can interpret. See "Programming"]

In Block Data Entry Mode, data goes from the keyboard to the screen. Pressing SEND transmits screen data to the host. The terminal can receive data from the host any time. However, in Local Data Entry Mode, the terminal has no communication with the computer.

The Duplex Edit and Local Edit (Keyboard Setup) modes affect only the editing keys. In Local Edit Mode, editing key codes go only to the screen, even when the terminal is in half or full duplex mode. If you are in Full Duplex (Communication Mode), you can turn on Local Edit mode (in setup or with a programming command) to ensure that the editing keys can control screen data.

In Duplex Edit mode, the destination of editing key codes is controlled solely by the Data Entry Mode.

To turn on Local Editing,

> in Keyboard Set-Up, (Figure 2-1), choose *Local*, or
> enter the sequence **ESC k**

To turn off Local Editing (return to Duplex Editing),

in Keyboard Set-Up, choose Duplex, or
enter the sequence **ESC l** (lower case L).

3.2 DISPLAYING DATA

There are several choices which affect how all data is displayed on the screen.

3.2.1 Video Background

The background may be set to either normal (dark letters against a light background) or reverse (light letters against a dark background) video either by selecting from Display Setup screen or by using one of the following sequences

Setup	Sequence
dark background	**ESC d**
light background	**ESC b**

3.2.2 Video Attributes

Each character displayed on the screen has two components: a datum attribute (essentially, what letter it is) and a video component (its appearance on the screen). The video attribute of characters may be changed, either before or after entering the character.

Video

In addition to normal (the same as the background), a character may be displayed with any of five attributes:

blank (character not displayed)
flash
reverse (opposite the background)
underline
half-intensity (dim)

and with any combination of these: e.g.

underline reverse
underline reverse flash
flash half-intensity

A particular video attribute or combination is inititated by a three-character escape sequence:

ESC G n

where "n" is the value associated with the attribute or combination. The value of "n" associated with each attribute is given in Table 3-3.

The effect of the sequence depends on whether attributes are embedded or not embedded.

3.2.2.1 Embedded Attributes

If a video attribute is embedded, it changes the appearance of all characters in its "range". Data already in the range or data entered into the range appears with the assigned attribute.

An embedded attribute's range is either the column position* occupied by a different embedded attribute or the "end" (Figure 2-7) of the current line or current page, depending on the setting in the General Setup screen.

Setting	Range ends at the
Line Attribute	Line
Page Attribute	Page

* An embedded attribute occupies a column and overrides any character previously entered in the column.

To select embedded video attributes,

Enter the sequence **ESC . 7**

FOR EXAMPLE, if row 1 reads:

Now is the time for all good men to come to the aid of their terminal.

to make "all" flashing,

1. Move the cursor to column 20.
2. Enter the sequence ESC . 7 (for embedded attributes)
3. Enter the sequence ESC G 2 (all characters after column 21 begin flashing; the embedded attribute occupies column 20).
4. Move the cursor to column 24.
5. Enter the sequence ESC G 0 (all characters after column 25 appear normal; the embedded attribute occupies column 24).

3.2.2.2 Non-Embedded Attributes

If a video attribute is non-embedded, each character subsequently entered anywhere on the screen has the assigned attribute. (Note: a non-embedded attribute does not take up a column.)

To select non-embedded video attributes,

Enter the sequence **ESC . 8**

FOR EXAMPLE, if row 1 reads:

Now is the time for all good men to come to the aid of their terminal.

to make "Now" and "all" flashing,

1. Move the cursor to column 1.
2. Enter the sequence ESC . 8 (for non embedded attributes)
3. Enter the sequence ESC G 2 (typed characters will appear flashing).
4. Type "Now".
6. Move the cursor to column 21.
7. Type "all".
8. Enter the sequence ESC G 0 (typed characters will appear normal).

Defining a Range for Non-Embedded Attributes

With the *Ampex 270* terminal, you can also define a range for non-embedded attributes. Characters in the range will have the assigned attribute.

To define a range for non-embedded attributes, enter the sequence

ESC . B r c R C

where r, c denote the beginning row and column of the range in ASCII(see Appendix G)
R, C denote the ending row and column of the range in ASCII (see Appendix G)

NOTE

The particular attribute assigned to the range is the attribute in effect when the range is defined. In other words, enter the sequence for the desired attribute before entering the sequence specifying the range.

FOR EXAMPLE, if rows 1 and 2 read:

Now is the time for all good men
to come to the aid of their terminal.

to make "all good men to come to " underlined and half-intensity,

1. Enter the sequence ESC G x (for underline half-intensity).

2. Enter the sequence ESC . B space 4 !) (for the range). All characters in row 1, column 21 and beyond and all characters in row 2 up to column 10 appear underlined and dimmed.

Table 3-3. Video Attribute Escape Sequences

Attribute	Escape Sequence ESC G ...
normal	0
blank	1
flash	2
blank flash	3
reverse	4
blank reverse	5
flash reverse	6
blank flash reverse	7
underline	8
blank underline	9
flash underline	:
blank flash underline	;
reverse underline	<
blank reverse underline	=
flash reverse underline	>
blank flash reverse underline	?
normal H.I.	p
blank H.I.	q
flash H.I.	r
blank flash H.I.	s
reverse H.I.	t
blank reverse H.I.	u
flash reverse H.I.	v
blank flash reverse H.I.	w
underline H.I.	x
blank underline H.I.	y
flash underline H.I.	z
blank flash underline H.I.	{
reverse underline H.I.	|
blank reverse underline H.I.	}
flash reverse underline H.I.	~
blank flash reverse underline H.I.	DEL

3.2.2.3 Displaying All Characters (Monitor Mode)

Usually, only alphabet and numeric characters are displayed when entered. Pressing the CTRL key, the ESC key, the Backspace key or similar keys enters a code but no character is displayed. These characters may be displayed however (see Appendix H for a list of the characters and their meaning).

To display but not interpret all characters (sometimes called "monitor mode"), including escape sequences and control characters, enter one of the sequences

ESC U
CTRL/1

To return to the usual display of characters, enter one of the sequences

ESC X
CTRL/2
ESC u

3.2.3 Double Size Characters

The terminal is capable of displaying characters twice the height and/or twice the width of standard-size characters.

The basic procedure involves

1. Move the cursor to the desired row.
2. Enter the escape sequence for the desired size. Characters already on the row or characters you then type onto the row will have the desired size.

Double-High

A double-high character is formed using two adjacent rows: the top half of the character appears on the higher row, the bottom half appears on the lower row. Thus, to get the resulting effect of double-high characters, the same characters must appear twice, once on each row.

To enter the top of the each character:

1. With the cursor on the upper row, enter the sequence **ESC m 1**
2. Type in the desired characters.

To enter the bottom half of each character:

1. With the cursor on the lower row, enter the sequence **ESC m 2**
2. Type in the same characters as above.

To return to a row of double-high characters to single-high characters,

1. With the cursor on the appropriate row, enter the sequence **ESC m 0**

Double-Wide

A double-wide character is formed using adjacent columns on the same line: each letter fills two columns. NOTE: when you specify double-wide characters for a row, any characters in the right half of the row are lost.

To enter double-wide characters:

1. With the cursor on the desired row, enter the sequence **ESC p 1**

2. Type in the desired characters.

To return a row of double-wide characters to single-wide characters,

1. With the cursor on the appropriate row, enter the sequence **ESC p 0**

Double High and Wide

A double-high, double-wide character by combining the two approaches above, using adjacent rows and adjacent columns to form each character. NOTE: when you specify double-wide characters for a row, any characters in the right half of the row are lost.

To enter the top of the each character:

1. With the cursor on the upper row, enter the sequences **ESC m 1ESC p 1**
   or
   Set upper row double-high/double-wide **ESC m 3**

2. Type in the desired characters.

To enter the bottom half of each character:

1. With the cursor on the lower row, enter the sequence **ESC m 2 ESC p 1**
   or
   Set lower row double-high/double wide **ESC m 4**

2. Type in the same characters as above.

To return to a row of double-high, double-wide characters to single-high, single-wide characters,

With the cursor on the appropriate row, enter the sequences **ESC m 0 ESC p 0**
or
Reset double-high/double wide **ESC m 5.**

3.2.4 Special Graphics Characters

The terminal is also capable of generating special line and block graphics characters. In other words, pressing a key will produce not an alphabet or numeric character, but a graphics character.

To turn on the graphics mode,

enter the sequence **ESC $**

To turn off the graphics mode,

enter the sequence **ESC %**

The graphic generated by each key is given in Figure 3-1.

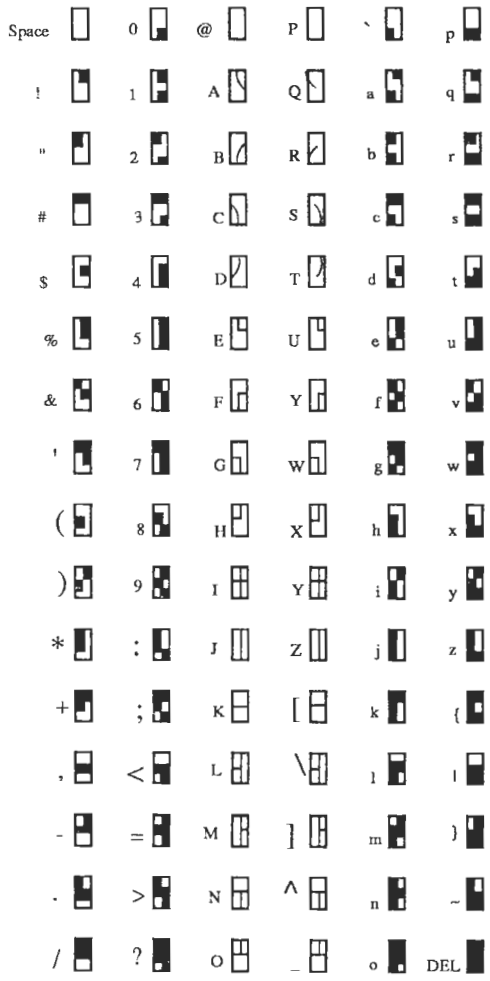


Figure 3-1. ***Ampex 270*** **Special Graphics**

3.2.5 Proportional Spacing

The following escape sequences turn on and turn off proportional spacing

To create proportional 80 columns, enter
ESC . S

To return to normal 80 columns, enter
ESC . T

3.2.6 Subscript/Superscript (80 Column Only)

A single subscript or superscript character may be formed by entering the escape sequence and then typing the desired character.

To form a subscript, enter
ESC . Q

To form a superscript, enter
ESC . R

3.2.7 Italics Character (80 Column Only)

This is an embedded line attribute. You may specify italics by entering the following sequences.

WARNING: The Italic Character Mode On (ESC . U) should be reset by ESC . V before being re-entered. If this command is entered more than once, then the displayed character is a multi-leveled italic. The character may appear distorted.

To display characters in italics, enter
ESC . U

To return to the normal display, enter
ESC . V

If ESC . V is entered without a preceding ESC . U command, then the resulting character appears as a left-tilted italic. ESC . V should only be used to reset a preceding ESC . U.

3.2.8 Strike-Through

The terminal is capable of producing a strike-through attribute. When this attribute is selected, each character subsequently entered has a strike-through line.

To turn on Strike-through, enter the sequence
ESC . O

To turn off Strike-through, enter the sequence
ESC . P

3.3 Scrolling and Flipping

The contents of the terminal's memory (what you enter at the keyboard and data received from the host) are displayed on the screen. The contents of the screen are stored in the terminal's memory.

"Scrolling" is the process of moving data from one line to an adjacent line (up or down). Data scrolls past the terminal's screen, like a film scrolls through a film projector. Data also scrolls in memory: as new data is received, existing data is pushed "up" a line.

To set the rate at which data scrolls,

in Display Set-Up, choose
Jump or
Smooth Scroll n

where n = 1 (fastest), 2, 3, 4, 5, 6, 7 (slowest).

If scrolling is set to Jump, data scrolls as fast as it is received.

3.3.1 Scrolling and Page Size

If there were a one-to-one match between memory and screen (where each handled 24 lines of data), a line of data which scrolls "off" the screen would also scroll "out of" memory.

On the *Ampex 270*, the screen handles 24 lines of data, but memory handles 96 lines. In this situation, the screen acts as a window into memory (see Figure 3-2).

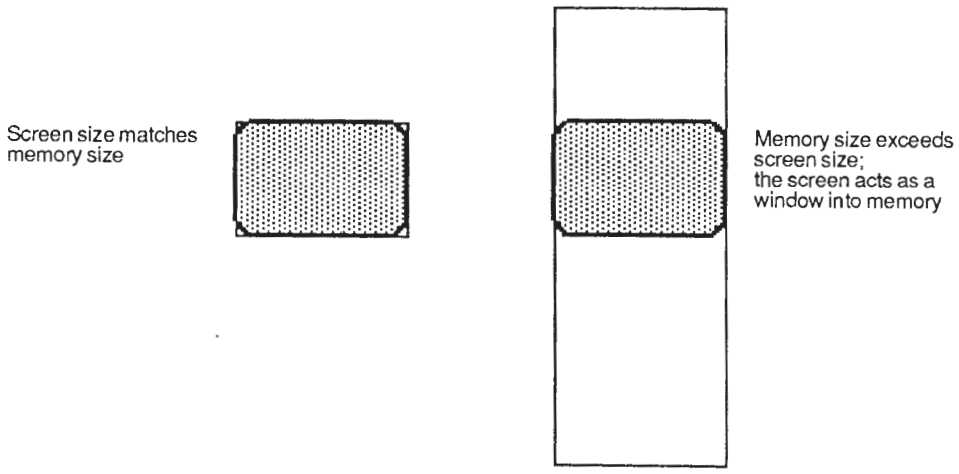


Figure 3-2. Screen Relative to Memory Size

The 96 lines of memory may be set up as 1, 2, or 4 pages (see Figure 3-3).

Received data scrolls only on the current page, i.e., the page on which the cursor is located. Thus, the size of a page determines how much new data can be stored before existing data is lost.

The size of a page (and thus the number of pages in memory) depends on two choices: the number of lines per page and the number of columns per line.

	Page Size (in characters)	
Lines/page	80 COL	132 COL
24	1920	3168
48	3840	6336
96	7680	- - -

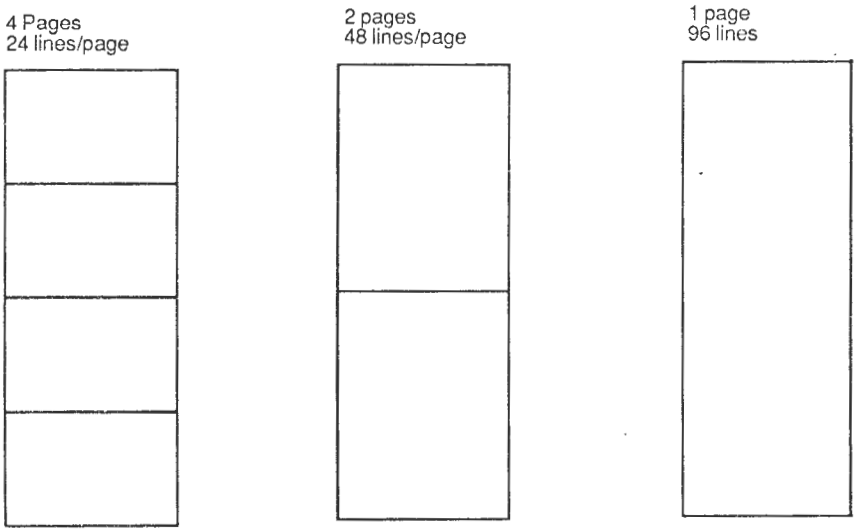


Figure 3-3. Alternative Page Divisions of Memory

Because the screen is a window, the line of data which scrolls off the screen need not be scrolling out of memory. And the line of data which scrolls out of memory need not be the one scrolling off screen (see Figure 3-4). The distinction here is important: what scrolls off the screen but remains in memory can be redisplayed; what scrolls out of memory is "lost", it cannot be redisplayed.

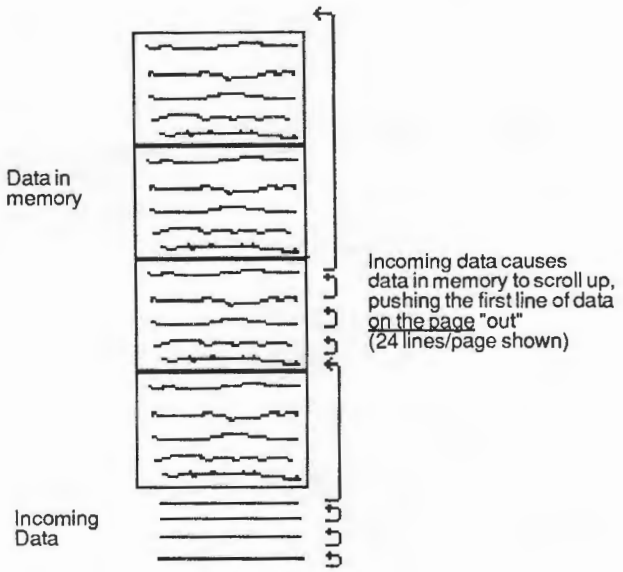

Data in memory
Incoming data causes data in memory to scroll up, pushing the first line of data on the page "out" (24 lines/page shown)
Incoming Data

Figure 3-4. Scrolling Data Past the Window

To change page length,

In Set-Up, choose	Enter **ESC** \ ...
24 lines/page	1
48 lines/page	2
96 Llines/page	3

To set line length,

In Set-Up, choose	Enter **ESC** . ...
Columns = 80	5
Columns = 132	6
Columns = Proportional 80	S

NOTE

Changing either line length or page length clears all data from both memory and screen.

3.3.2 No Scroll

Scrolling (in memory) may be turned off. If scrolling is off, data exceeding the last line of the page (i.e., typed data or received data which comes after the entry in the last column of the last line of the page) OVERWRITES data already on the page, beginning at the HOME position. (See Figure 3-5.)

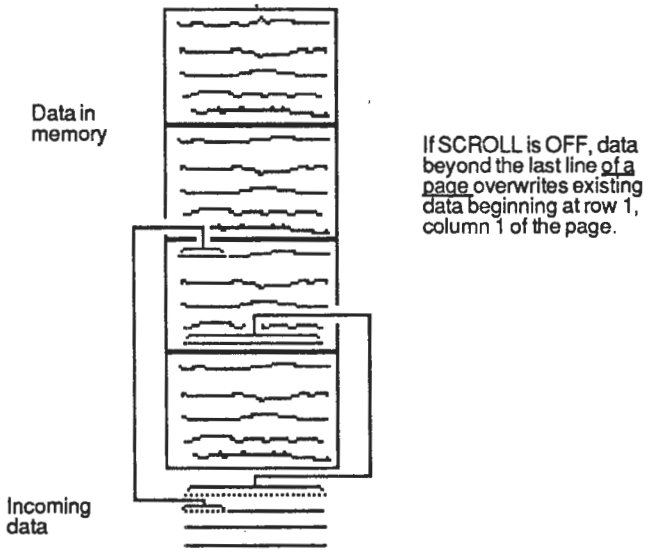

Data in memory
If SCROLL is OFF, data beyond the last line of a page overwrites existing data beginning at row 1, column 1 of the page.
Incoming data

Figure 3-5. No Scroll

Note: If lines per page is 48 or 96, data will continue to scroll in the display, even if scrolling is turned OFF.

To turn off scrolling

In Display Set-Up, (Figure 2-19), choose Auto Scroll = Off.

If scroll is	incoming data exceeding last line of page
on	is stored on last line, preceding data scrolls "up" one line, data on line 1 scrolls "out" of memory (is lost)
off	overwrites data already on page, beginning at row 1, column 1.

3.3.3 Customizing Scrolling

Ordinarily, the area of the screen in which data scrolls is the entire 24 rows; and the lines of memory in which data scrolls is the current page. For example, if the cursor is on page 2 when lines per page is 48, then the scrolling area of memory is lines 49 through 96.

Scrolling can be customized in two ways. One way, defining a scrolling region, is used to restrict the area of the screen, and the related area in memory, in which data may scroll. The other, locking lines, is used to exclude from scrolling certain rows of the screen, and their associated lines in memory.

NOTE: Customized scrolling applies only to the page on which it is set-up. E.g., if you customize scrolling on page 1, page 2 may scroll in the usual way.

NOTE also: When scrolling is customized, cursor addressing is relative to the customized area. For example, if a scrolling region has only 10 lines, the last line of the region is the tenth line.

NOTE

Customizing scrolling when the lines/page is 48 or 96 is NOT recommended.

3.3.3.1 Defining a Scrolling Region

Defining a scrolling region simultaneously restricts scrolling

to a particular area of the screen
to a particular area of memory.

Any block of adjacent rows of the screen may be defined as the scrolling region. The associated lines in memory, i.e., the lines appearing in those rows when you define the region, determine the scrolling region of memory. In effect, it determines what lines of memory outside the scrolling region remain visible. (See Figures 3-6 and 3-7.)

To define a scrolling region, enter the sequence

ESC _ A B

where A top row of the screen scroll region (in ASCII) (see Appendix G)
B bottom row of the screen scroll region (in ASCII) (see Appendix G)

To reset scrolling to the full screen and the entire page, enter the sequence

ESC _ space 7

NOTE

If lines per page is 24, the row number is the same as the line number (cursor location). In all other instances, it is necessary to count in order to determine the (decimal) number of a row.

NOTE
Once a scrolling region is defined, cursor location is determined by the scroll region. E.g., the first line of the scroll region is identified as line 1, the second line (if any) as line 2, and so on.

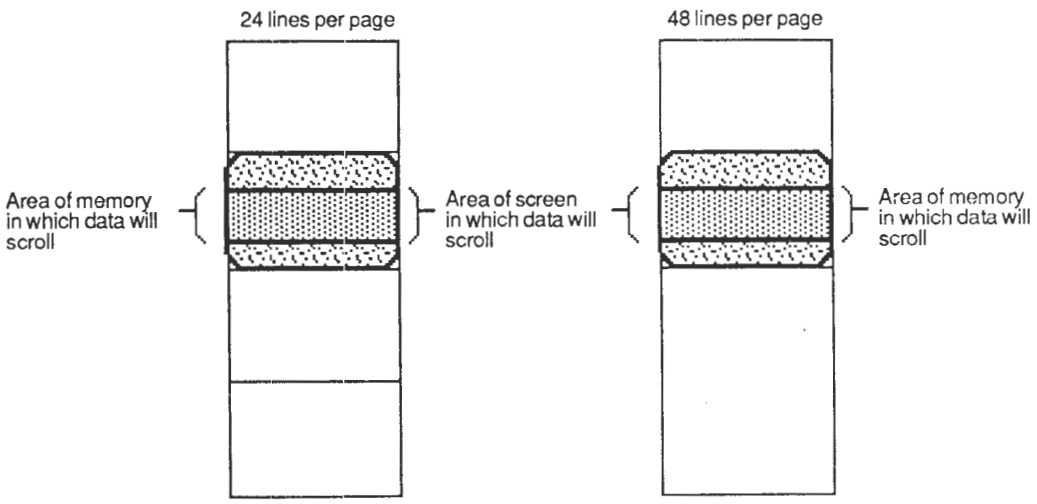

24 lines per page
48 lines per page
Area of memory in which data will scroll
Area of screen in which data will scroll
Area of screen in which data will scroll
Area of memory in which data will scroll

Figure 3-6. Scrolling Region

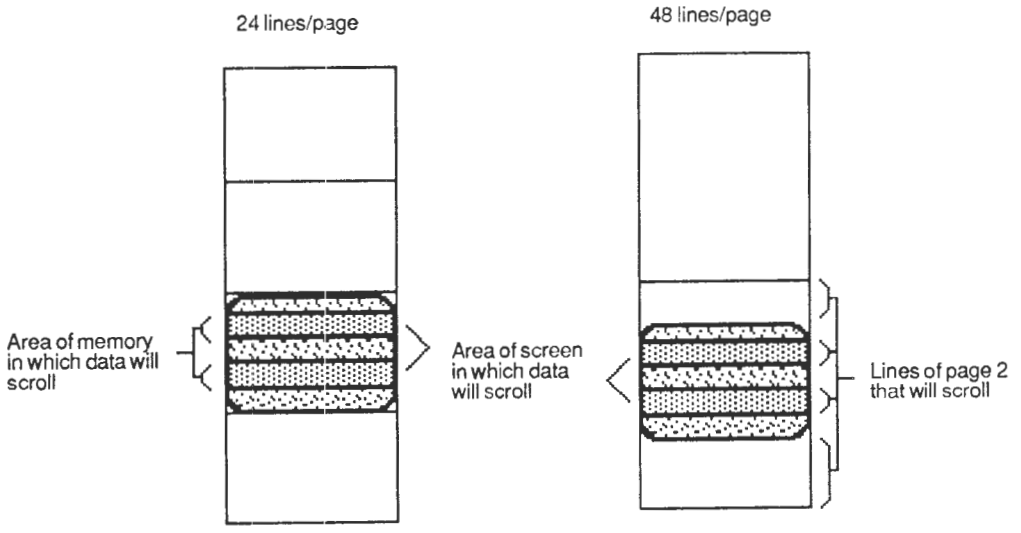

24 lines/page
48 lines/page
Area of memory in which data will scroll
Area of screen in which data will scroll
Lines of page 2 that will scroll

Figure 3-7. Locking Lines

NOTE

Data exceeding the last line of the scrolling region pushes all preceding lines of the region up one, so that the first line of data in the region is lost.

Example:

Suppose that Lines/page is 24.

To define a scrolling region of rows 10 through 15, enter the sequence

ESC _)

Received or typed data scrolls only on those rows. The first row of the region, row 10, is identified as line 1 on the Status Line, row 11 as line 2, and so on up to row 15 as line 6. In this situation, the cursor cannot go beyond line 6.

When the entire screen again becomes the scrolling region, the data appearing on rows 10 through 15 scroll in the usual way.

3.3.3.2 Locking Lines

Locking a line simultaneously excludes from scrolling

the row on the screen on which the cursor appears
the associated line in memory on which the cursor is located.

Any collection of rows may be locked; up to a total of 23. The associated line(s) in memory, i.e., the line on the row when the row is locked, is excluded from scrolling. In other words, the lines in locked rows remain on the screen when the page is on screen. All other lines of the page scroll. Together, the effect is like a window with louvers. (See Figures 3-6 and 3-7.)

To lock a line,

1. Move the cursor to the row to be locked
2. Enter the sequence ESC ! 1
3. Repeat steps 1 and 2 for each row to be locked.

To unlock all locked lines, enter the sequence

ESC ! 2

NOTE

When lines are locked, cursor location is determined by the scroll area. E.g., the first line of the scroll area is identified as line 1, the second line (if any) as line 2, and so on. The number of the last line of the scroll area is

Page size - number of locked lines

NOTE

When all lines are again unlocked, data on previously locked rows resume scroll-order relative to the lines on screen. See the example below.

Example:

Suppose that Lines/page is 24.

To lock rows 10, 15, 19, and 20,

move the cursor to row 10 and enter the sequence ESC ! 1
move the cursor to each of the other rows and enter the sequence

In this situation, lines 10, 15, 19, and 20 are locked, i.e., excluded from scrolling. Only the unlocked lines scroll. The first unlocked line of the page, in this case line 1, is identified on the Status Line as line 1, the second unlocked line as line 2, and so on. Line 10 on the Status Line is the data on line 11 in memory (the data on line 10 in memory is locked, and thus not counted here). Line 20, the last line of the scrolling area, is the data on line 24 in memory.

When all lines are unlocked again, data scrolls in the usual way.

There is no smooth scroll when lines are locked.

NOTE

If lines per page is 48 or 96, scroll-order of the locked lines depends on which unlocked lines were on-screen when all lines were unlocked.

3.3.4 Flipping from Page to Page

Ordinarily, data exceeding the last line of a page is written on the same page -- regardless of whether scrolling is ON or OFF.

The terminal may be set so that data exceeding the last line of a page is written on the next page; i.e., so that the terminal "flips" to a new page to store the data (and the screen flips to a new page to display the data). See Figure 3-8.

NOTE: Data exceeding the last line of the last page flips to the first page.

To turn on page flipping,

In Display Setup, set Flip Mode = On or
enter the sequence ESC v

To turn off page flipping,

In Display Setup, set Flip Mode = Off or
enter the sequence ESC w

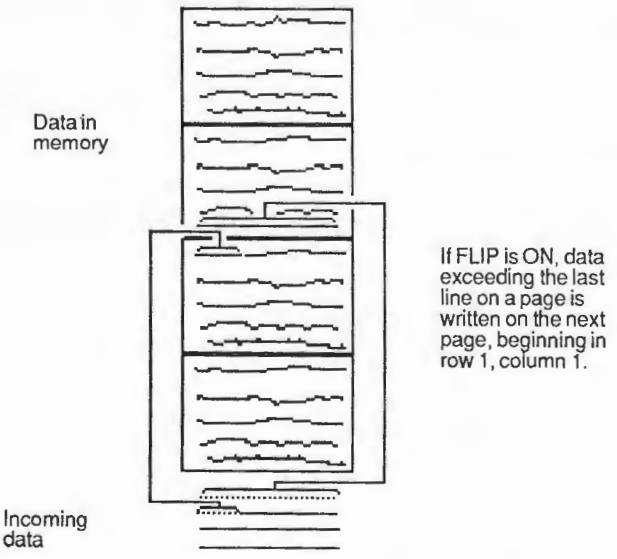

Data in memory
If FLIP is ON, data exceeding the last line on a page is written on the next page, beginning in row 1, column 1.
Incoming data

Figure 3-8. Flipping from Page to Page

3.4 ENTERING AND EDITING DATA

Text entered via the keyboard or received from a host can be edited on the *Ampex 270* terminal in a variety of contexts. In some cases the effect of editing depends on whether or not write-protection is in effect (Section 3.4.1), whether characters you type are inserted or replace displayed characters (Section 3.4.3.1), and on page characteristics (Section 3.3). These differences will be noted when applicable.

3.4.1 Write-protecting Data

Certain areas of the screen can be "write-protected". Write-protecting an area has basically two purposes:

Prevent data in the area from being edited
Prevent data in the area from being sent to the host.

For example, write-protecting may be used to create on-screen forms. Standard information on the form, such as headings (e.g., "Admission Form") and labels ("Name", "Address", etc.), is entered into write-protected areas.

To enter data which you want to "write-protect",

1. Move the cursor to the area to be protected.
2. Press **ESC)**. (This signals the beginning of a protected field.) "WPT" (Write Protect) will appear on the status line.
3. Enter the desired characters, numbers, and spaces.
4. Press **ESC (** . (This signals the end of the protected field.) WPT disappears from the status line.

To then protect such data from being edited (PRT will appear on the StatusLine),

enter the sequence **ESC &**.

To unprotect such data (so that it may be edited) (PRT will disappear from the status line),

enter the sequence **ESC '** (single quote).

Video Attributes of Protected Characters

Ordinarily, protected characters are displayed in half-intensity (dimmer than normal). Different video attributes for protected characters may be selected in Display Setup.

Dim	Normal
Invisible	Reverse
Underline	

3.4.2 Moving the Cursor

3.4.2.1 Cursor Keys

The cursor keys control the movement of the cursor. The effect of each key depends on how you have set up the terminal (see Section II).

Table 3-4. Cursor Keys

Note: PROT ON means Protect (Text) mode is on (PRT displays on the Status Line).

Key	Command	Setting	Effect
ARROW KEYS DOWN	CTRL/V		Moves cursor down one line in same column. If cursor is on last line of page, cursor does not move.
SHIFT/DOWN	CTRL/J		{same as linefeed}
UP	CTRL/K		Moves cursor up one row in same column. If cursor is on line cursor does not move.
SHIFT/UP	ESC j		Moves cursor up one row in same column.
		SCROLL ON	If cursor is on row 1, all lines of data move down one; cursor remain on row 1 in same column.
		SCROLL OFF or PROT ON	If cursor is on row 1, moves cursor to last line of page; all lines of data remain in place.
LEFT	CTRL/H		Moves cursor one column left. If cursor is in column 1, moves cursor to last column of preceding line.
		SCROLL OFF or PROT ON	If cursor is HOME, moves cursor to last column of last line of page.
		SCROLL ON	If cursor is HOME, cursor will not move.

Table 3-4. Cursor Keys (Continued)

Key	Command	Setting	Effect
RIGHT	CTRL/L		Moves cursor one column right.
		WRAP ON	If cursor is in last column of line,moves cursor to first column of next line.
		& SCROLL ON	If cursor is in last column of last line of page, all lines of data scroll up one and cursor moves to first column of last line of page.
		& SCROLL OFF or PROT ON	If cursor is in last column of last line of or page, cursor moves to HOME, no scrolling occurs.
		WRAP OFF	If cursor is in last column of line, command ignored.
BACK SPACE	CTRL/H		Moves cursor one column left. If cursor is in column 1, moves cursor to last column of preceding line.
		SCROLL OFF or PROT ON	If cursor is HOME, moves cursor to last column of last line of page.
		SCROLL ON	If cursor is HOME, cursor will not move.
BACK TAB	ESC I	PROT OFF	Moves cursor to previous tab stop or, if no previous tab stop on the line, to column 1.
		PROT ON & FLIP OFF	Moves cursor to start of the previous unprotected field on the current page. If none, moves cursor to start of following unprotected field on page. If none, cursor moves to the HOME position and resets Protect mode.

Table 3-4. Cursor Keys (Continued)

Key	Command	Setting	Effect
		PROT ON & FLIP ON	Moves cursor to start of the previous unprotected field on the current page. If none, moves cursor to start of following unprotected field on the page. If none,moves cursor to start of first unprotected field on next page. If none, cursor moves to HOME position and resets Protect mode.
HOME	CTRL/^	PROT OFF	Moves cursor to HOME position (row 1, column 1)
		PROT ON	Moves cursor to beginning of first unprotected field on the page.
LINEFEED	CTRL/J		Moves cursor down one line in same column.
		SCROLL ON	If cursor on last line of page, all lines of data move up one; cursor remains on last line of page in same column.
		SCROLL OFF	If cursor on last line of page, moves cursor to HOME; all lines of data remain(no scrolling).
PAGE	ESC K		Moves display to next page, cursor moves to its last position on page. If no previous position on page, cursor moves to HOME.
SHIFT/PAGE	ESC J		Moves display to previous page, cursor moves to its last position on page.
RETURN	CTRL/M	CR=CRLF & PROT OFF	Moves cursor to first column of next line.
		& PROT ON	Moves cursor to first unprotected column of the next and following lines.
		& SCROLL ON	If cursor on last line of page, all lines of data move up one and cursor moves to beginning of last line.

Table 3-4. Cursor Keys (Continued)

Key	Command	Setting	Effect
		CR=CRLF & SCROLL OFF	If cursor on last line of page, cursor moves to HOME, all lines of data remain in place (no scrolling).
		CR=CR & PROT OFF	Moves cursor to first column of the same line.
		& PROT ON	Moves cursor to first unprotected column of the same line. If the line is protected, moves cursor to next unprotected column on the page.
TAB	CTRL/I	PROT OFF	Moves cursor to next tab stop; ignored if there is no next tab stop.
		PROT ON & FLIP OFF	Moves cursor to the beginning of the next unprotected field on the current page. If there are no unprotected field on the page, cursor moves to HOME position and resets Protect mode.
		& FLIP ON	Moves cursor to the beginning of the next unprotected field, if any. If none,cursor moves to HOME position and resets Protect mode.
[Field Tab]	ESC i	PROT OFF	Ignored
		PROT ON & FLIP OFF	Moves cursor to the beginning of the next unprotected field on the current page. If there are no unprotected fields on the page, cursor moves to HOME position and resets Protect mode.
		& FLIP ON	Moves cursor to the beginning of the next unprotected field, if any. If none, cursor moves to HOME position and resets Protect mode.

3.4.2.2 Moving the Cursor using an Escape Sequence

An escape sequence can also be used to move the cursor (known as "addressing" the cursor) to any location on the current page or to another page.

Moving on the Current Page

Either of two methods may be used to move the cursor on the current page. One method uses an ASCII conversion of the (decimal) number of the row or column; the other uses the number itself.

Using an ASCII Conversation (Not recommended if line length is 132 columns)

To position the cursor to a new row and column, enter the sequence

For columns 1 to 80	For columns 81 to 132
ESC = r c	**ESC** = r **CTRL/_** c

where r denotes the desired row (in ASCII) (see Appendix G)
c denotes the desired column (in ASCII) (see Appendix G)

For example,

ESC = (CTRL/_ 3

positions the cursor in row 9, column 100.

Using the Decimal Number

To position the cursor regardless of whether line width is 80 or 132 columns, enter the sequence

ESC .9 rr R ccc C

where rr denotes the number of the desired row (HOME = 01)
ccc denotes the number of the desired column (HOME = 01)

Note: this sequence cannot be used to move the cursor to another page.

FOR EXAMPLE

ESC .9 1 R 1 C

moves the cursor to the HOME position.

ESC .9 48 R 71 C

moves the cursor to row 48, column 71 (only if page length is 48 or 96 lines).

Moving to Another Page

An escape sequence can also be used to move the cursor to another page. Two methods are available: for moving the cursor to an adjacent page, for moving it to a particular location on any other page.

Moving to an Adjacent Page

To move the cursor to the next page, enter the sequence

ESC K

The cursor moves to its last position, if any, or to the HOME position on the next page.

To move the cursor to the previous page, enter the sequence

ESC J

The cursor moves to its last position on the previous page.

Moving to Any Other Page

To position the cursor to a particular location on any other page, enter the sequence

For columns 1 to 80	For columns 81 to 132
ESC - p r c	**ESC** - p r **CTRL**/_ c

where p denotes the desired page (0 = page one, 1 = page two, etc.)
r denotes the desired row (in ASCII) (see Table G)
c denotes the desired column (in ASCII) (see Table G)

FOR EXAMPLE,

ESC - 1 . 3

positions the cursor on page two, row 15, column 20.

3.4.2.3 Locating the Cursor with an Escape Sequence

An escape sequence may also be used to locate ("read") the cursor.

To read the current row and column of the cursor,

1. Enter the sequence **ESC ?**

To read the current page, row, and column of the cursor,

1. Enter the sequence **ESC /**

3.4.2.4 Entering Data at the Hidden Cursor

Data may be entered even if the cursor is hidden, i.e., even if the cursor is not on the displayed page.

To enter data to a hidden cursor, enter the sequence

ESC **. D** p r c text **CTRL/Y**

where	p	denotes the page (0 = page 1, 1 = page 2, etc.)
	r	denotes the row (in ASCII)(see Appendix G)
	c*	denotes the column (in ASCII) (see Appendix G)
	text	represents the text entered at the cursor
	CTRL/Y	denotes the end of the text entered.

* Enter "c" for a column between 1 and 80; enter "CTRL/_ c" for a column between 81 and 132.

3.4.3 Editing Data

3.4.3.1 Defining the Editing Mode

The "Editing Mode" determines the effect of data entered from the keyboard and the range of characters affected by editing. The Editing Mode may be set in Set-Up or by using an escape sequence.

Entering data from the keyboard can be done in one of two ways:

Replacing (overwriting) characters, beginning at the cursor
Inserting characters, beginning at the cursor

The range affected by inserting or deleting characters may be

line (from the cursor to the end* of the line)
page (from the cursor to the end* of the page)

* Data exceeding the end is lost.

The combination of these two factors then defines four editing modes:

Effect of Typing	Line Editing Mode	Page Editing Mode
Replace	Edit Line	Edit Page
Insert	Insert Line	Insert Page

To set the editing mode in Set-Up (Line 1),

For	choose
Edit Line	Line Edit/Insert Mode = Off
Edit Page	Page Edit/Insert Mode = Off
Insert Line	Line Edit/Insert Mode = On
Insert Page	Page Edit/Insert Mode = On

To set the Editing mode using Escape Sequences, set the effect of typing and the range independently.

To set the effect of typing,

For	Enter sequence	Or press
Insert	ESC q	CTRL/CHAR INSERT
Replace	ESC r	CTRL/CHAR DELETE

To set the range,

For	Enter sequence	Or press
Page	ESC N	CTRL/LINE INSERT
Line	ESC O	CTRL/LINE DELETE

3.4.3.2 Edit Keys

The Editing keys are used to make changes to data displayed on the screen. The effect of each key depends on how the terminal is set up (see Section II). The effect of each key is shown in Table 3-5.

Table 3-5. Edit Keys

Note: PROT ON means Protect (Text) mode is on (PRT displays on the Status Line).

Note also: The default Insert-Character is space. To change the Insert-Character to some other character, enter the sequence

ESC e x

where x denotes the desired (alphabet or numeric) Insert-Character.

Key	Command	Mode	Effect
CHAR DELETE	ESC W	PROT OFF	Deletes character at the cursor position, moves all following characters one column left. Insert-Characters fill ending columns vacated by moving characters.
		PROT ON	Deletes character at the cursor position, moves all following unprotected characters in the field one column left (character in last unprotected column is replaced by an Insert-Character).
CHAR INSERT	ESC Q	PROT OFF	Enters an Insert-Character at the cursor position, moves all following characters one column right (character in last column of range is lost).
		PROT ON	Enters an Insert-Character at the cursor position, moves all following unprotected characters in the field one column right (character in last unprotected column is lost).
ERASE LINE	ESC T	PROT OFF	Erases all characters from cursor position to end of line. Insert-Characters replace erased characters.
		PROT ON	Erases all unprotected characters from cursor position to end of line. Insert-Characters replace erased characters.

Table 3-5. Edit Keys (Continued)

Key	Command	Mode	Effect
ERASE PAGE	ESC Y	PROT OFF	Erases all characters from cursor position to end of page. Insert-Characters replace erased characters.
		PROT ON	Erases all unprotected characters from cursor position to end of page. Insert-Characters replace erased characters.
CTRL/ERASE LINE	ESC t	PROT OFF	Erases all characters from cursorposition to end of line. Null characters replace erased characters.
		PROT ON	Erases all unprotected characters from cursor position to end of line. Null characters replace erased characters.
CTRL/ERASE PAGE	ESC y	PROT OFF	Erases all characters from cursor position to end of page. Null characters replace erased characters.
		PROT ON	Erases all unprotected characters from cursor position to end of page. Null characters replace erased characters.
LINE DELETE	ESC R	PROT OFF	Deletes data in the line on which cursor is positioned. Remaining data moves up one line; Insert-Character replace the last line. Cursor moves to column 1 on same line.
		PROT ON	Command ignored.
LINE INSERT	ESC E	PROT OFF	Beginning with line on which cursor is located, moves data down one line;Insert-Characters fill the line on which cursor is positioned (data on last line is lost); moves cursor to column 1 of line.
		PROT ON	Command ignored.

3.5 CLEARING DATA

There are several ways to clear data from the screen and/or host's memory. The table below lists different ways to clear data.

Note: The default Insert-Character is space. To change the Insert-Character to some other character, enter the sequence

ESC e x

where x denotes the desired (alphabet or numeric) character

NOTE

If Protect (Text) mode is OFF, CLEAR-unprotected commands work like CLEAR-all commands: they clear all characters.

NOTE also

If Write-Protect (Text) mode is OFF, CLEAR-unprotected commands work like CLEAR-all commands: they clear all characters.

NOTE finally

If Write-Protect (Text) mode is OFF, CLEAR-unprotected commands clear all characters with full intensity Insert-Characters. If Write-Protect (Text) mode is ON, CLEAR-unprotected commands clear all characters with protected-text video-attribute Insert-Characters.

Table 3-6. Clear Commands

Command	Code Key	Effect
Clear Unprotected to Nulls	ESC : - - -	Clears all unprotected data on the page to null characters.
Clear All to Nulls	ESC * CTRL/CLEAR	Clears all data on the page to null characters, resets Protect Mode and Write-Protect Mode to OFF.
Clear Unprotected to Half Intensity Insert-Character	ESC , - - -	Clears all unprotected data on the page with half-intensity Insert-Character.
Clear Unprotected to Insert-Character	CTRL/X CLEAR ESC + *or* ESC ;	Clears all unprotected data on the page with Insert Character..
Clear Field to Spaces (Clear Entry)	CTRL/X CE	If PROT OFF, erases all characters between the previous tab stop and next tab stop and movers cursor to previous tab stop. If no previous tab stop, erases from column 1. If no next tab stop, erases to end of line. If no tab stops erases entire line. If PROT ON, erases all characters in the field of unprotected data in which the cursor is located.

3.6 ENTERING FUNCTION COMMANDS

A function command is used to execute an action without having to repeatedly enter the same series of keystrokes. There are two ways to enter function commands on the *Ampex 270*, pressing the FUNCT key in conjunction with another key or pressing one of the function keys.

3.6.1 Using the FUNCT key

To enter a command using the FUNCT key, simultaneously press the FUNCT key and the desired second key.

Pressing the two-keys transmits a three-character sequence: SOH (start of header), the ASCII character of the second key, and a CR (carriage return).

For example,

pressing	sends the function-code sequence
FUNCT/A	SOH A CR

3.6.2 Using the Function Keys

Pressing a function key or pressing SHIFT/function-key transmits a three-character sequence: SOH (start of header) = CTRL/A, the ASCII character associated with the function key, and a CR (carriage return). The ASCII character transmitted by each function key is given in Table 3-7.

Table 3-7. Function Key Sequences

Function Key	Fn transmits SOH ... CR	SHIFT/Fn transmits SOH ... CR
F1	@	`
F2	A	a
F3	B	b
F4	C	c
F5	D	d
F6	E	e
F7	F	f
F8	G	g
F9	H	h
F10	I	i
F11	J	j
F12	K	k
F13	L	l
F14	M	m
F15	N	n
F16	O	o

3.6.2.1 Programming the Function Keys

You may change the sequence transmitted by pressing a function key. "PGK" appears on the Status Line during programming.

To program a function key, enter the sequence

ESC | p1 p2 message **CTRL/Y**

where p1 denotes the function key to be programmed (Table 3-8),
p2 denotes where the code will be transmitted (Table 3-9),
message denotes the desired function, and
CTRL/Y is the mandatory termination character.

1. Function key command set is determined in set-up; default: Set 0

2. Programmed function key won't be saved in non-volatile memory unless function key Auto Save = On in setup.

Table 3-8. Values of p1 for *Ampex 270* Fn Keys

Function Key	Function Key Command Set=0		Function Key Command Set=1	
	Unshifted	Shifted	Unshifted	Shifted
F1	1	<	1	A
F2	2	=	2	B
F3	3	>	3	C
F4	4	?	4	D
F5	5	@	5	E
F6	6	A	6	F
F7	7	B	7	G
F8	8	C	8	H
F9	9	D	9	I
F10	:	E	:	J
F11	;	F	;	K
F12	G	L	<	L
F13	H	M	=	M
F14	I	N	>	N
F15	J	O	?	O
F16	K	P	@	P

Table 3-9. Values of p2 for *Ampex 270* Fn Keys

If p2 is	New function code sent to
1	computer (full duplex)
2	screen only (local)
3	computer and screen (half duplex)

The "message" is the desired function: a string of ASCII characters, control codes, and escape sequences. Total memory available for storing new function key codes is 1K bytes. If desired, all storage may be devoted to reprogramming one function key. Be careful when programming: if you make a mistake while typing, you will need to start over.

Note also: If "CTRL/Y" is to be part of the message, enter the "Bypass Code"

CTRL/P

immediately before the CTRL/Y. The Bypass code denotes that the following code is to be part of the message. As you might expect, you include the Bypass Code itself in the message in the same way: CTRL/P CTRL/P

For example,

```
ESC | p1 p2        message              CTRL/Y
ESC | 1  1   TURN ON PRINTER CR         CTRL/Y
```

programs F1 to send the message "TURN ON PRINTER" to the host.

3.6.3 Executing a Function Key from the Host

The action of a function key may also be initiated by the host.

To execute a function key from the host, send to the terminal the sequence

ESC . A p1

where p1 denotes the function key to execute (see Table 3-8)

3.7 SENDING

Data entered while the terminal is in BLOCK mode is not transmitted to the host until you SEND it. (NOTE: If the terminal is not in BLOCK mode and you try to SEND, only the particular escape sequence is sent.)

There are six commands which can be used to transmit data from the terminal to the host. Table 3-10 indicates the code used to initiate transmission and if the SEND key can be used to initiate transmission. Table 3-11 describes the effect of each command if the terminal is set to Protect (Text) mode (PROT ON).

NOTE

When attempting to send only unprotected characters, make sure that Protect Mode is on: It's ON if "PRT" appears on the status line.

Table 3-10. SEND Command Codes

Command	Code	SEND key?
Send Line Unprotected	ESC 4	-
Send Page Unprotected	ESC 5	-
Send Line All	ESC 6	SHIFT/SEND
Send Page All	ESC 7	SEND
Send Unprotected Message	ESC S	-
Send Message All	ESC s	-
Send User Line	ESC Z0	-
Send Status Line	ESC Z1	-
Send Terminal ID	ESC M	-

NOTE

If the terminal is set to PROT OFF, SEND-unprotected commands work like SEND-all commands: they transmit all characters (in particular, no start or end of unprotected field codes are sent).

Table 3-11. Effect of SEND Commands

Command	Effect
Send Line Unprotected	Transmits all unprotected characters on a line, from column 1 through cursor position. [Cursor must be on the line to be transmitted.] ASCII code FS (1C hex) is sent in place of each protected field and an end-of-message character is sent at the end of transmission.
Send Page Unprotected	Transmits all unprotected characters on page, from HOME through cursor position. ASCII code FS (1C hex) is sent in place of each protected field, an end-of-line character is sent at the end of each line, and an end-of-message character is sent at the end of transmission.
Send Line All	Transmits all characters on a line, from column 1 through cursor position. [Cursor must be on the line to be transmitted.] ESC) is sent to denote the beginning of each protected field, ESC (is sent to denote the end of each protected field, and an end-of-message character is sent at the end of transmission. ESC $ is sent to denote the beginning of Graphics characters. ESC % is sent to denote the end of Graphics characters.
Send Page All	Transmits all characters on page, from HOME through cursor position. ESC) is sent to denote the beginning of each protected field, ESC (is sent to denote the end of each protected field, an end-of-line character is sent at the end of each line, and an end-of-message character is sent at the end of transmission. ESC $ is sent to denote the beginning of Graphics characters. ESC % is sent to denote the end of Graphics characters.
Send Unprotected Message	Transmits all unprotected data denoted by start-of-text (STX) and end-of-text (ETX) code(s). If there is no STX code, transmission begins at the HOME position. If there is no ETX code, transmission concludes at the END of the page. FS codes (1C hex) is sent in place of each protected field, an end-of-line character is sent at the end of each line, and an end-of-message character is sent at the end of transmission.

Table 3-11. Effect of SEND Commands (Continued)

Command	Effect
Send Message All	Transmits all data denoted by start-of-text (STX) and end-of-text (ETX) code(s). If there is no STX code, transmission begins at the HOME position. If there is no ETX code, transmission concludes at the END position. ESC) is sent to denote the beginning of each protected field, ESC (is sent to denote the end of each protected field, an end-of-line character is sent at the end of each line, and an end-of-message character is sent at the end of transmission.
Send User Line	Transmits the contents of the user line to the computer.
Send Status Line	Transmits the contents of the status line to the computer.
Send Terminal ID	Transmits the ANSWERBACK message (see Status Line Setup/Submenu Selection).. Default message is software level, number of pages in memory (1= 1 page, 2 = 2 pages, or 3 = 4 pages), and a carriage return.

3.7.1 Programming Delimiters

Depending upon the particular SEND command, the terminal transmits a delimiter to signify the

existence of a protected field,
end of each line,
start of each protected field,
end of each protected field, and
end of the message.

The default values for each of these are given in Table 3-12.

Table 3-12. Default Delimiter Values for SEND

Delimiter	p1	p2
Existence of a protected field	FS	null
End of line	US	null
Start of protected field	ESC	)
End of protected field	ESC	(
End of the message	CR	null

To change a delimiter (It must match the delimiter used by the host), enter the sequence

ESC x n p1 p2

where n is the code for the delimiter being programmed:

Code	Delimiter
0	protected field
1	end of line
2	start of protected field
3	end of protected field
4	end of message

p1 is any ASCII character or control code*
p2 is any ASCII character or control code*

* If no delimiter is needed, enter p1 and p2 as nulls.

3.7.2 Programming the SEND Key

You can change the effect of pressing SEND or SHIFT/SEND.

To program the SEND key, enter the sequence

ESC 0 x y

where x denotes the SEND key to be programmed (1=SEND, 2=SHIFT/SEND),
y denotes the code to be transmitted (see Table 3-13).

Table 3-13. Programming the SEND Key

y	Sequence	Effect
4	ESC 4	Send Line Unprotected
5	ESC 5	Send Page Unprotected
6	ESC 6	Send Line All
7	ESC 7	Send Page All
S	ESC S	Send Message Unprotected
s	ESC s	Send Message All

FOR EXAMPLE,
ESC 0 1 7

programs the SEND key to Send Page All.

3.8 PRINTING

Data may be printed by sending it (via the auxiliary port) to a printer attached to the terminal. During printing, a message appears on the Status Line to indicate the print command used.

The printer can communicate with the host if the terminal's printer (auxiliary) port is set for "Bidirectional Print" (paragraph 2.2.1)..

Data may be sent through the printer port in any of several ways (see Table 3-14), using either an escape code or, if appropriate, the PRINT key.

Table 3-14. PRINT Commands

Command	Start	Stop
Page Print (formatted)	ESC P or PRINT	-
Page Print (unformatted)	ESC L or SHIFT/PRINT	-
Transparent Print	ESC `	ESC a
Copy Print	ESC @	ESC A
Bidirectional	CTRL/R	CTRL/T
Print Viewport	ESC VN	-
Print Screen	ESC VM	-

Table 3-15. Effect of PRINT Commands

Command	Effect
Page Print (formatted)	Transmits data from HOME through cursor position. Prints data as entered, including line delimiters at the end of each line (carriage return and linefeed) and end of printing. At the end of printing, ACKnowledge code (06 Hex) sent to the host; cursor positioned on the next page.
Page Print (unformatted)	Transmits data from HOME through cursor position. Prints data as entered, but without delimiters at the end of each line and end of printing. At the end of printing, ACKnowledge code (06 Hex) sent to the host; cursor positioned on the next page.
Transparent Print	Following **ESC '**, terminal transmits all data received from the host, including escape sequences and control codes, directly to the printer without acting upon the data or displaying it on the screen. Data is sent first to terminal's buffer before going to printer. If terminal's buffer is in danger of overflowing, terminal transmits an XOFF or a drop DTR, signalling the host to stop sending. When the buffer is again able to receive, the terminal sends an XON or raise DTR, signalling the host to resume.
Extension (Copy) Print	Following **ESC @**, terminal transmits all data received from the host, including escape sequences and control codes, both to the printer and to the screen.
Bidirectional	Following CTRL/R, communication between host and printer is in both directions: not only from host to printer but also printer to host.

Table 3-15. Effect of PRINT Commands (Continued)

Command	Effect
Print Screen	Following ESC VM, terminal transmits all data displayed on screen to printer.
Print Viewport	Following ESC VN, terminal transmits all data displayed in viewport to printer.

3.9 PROGRAMMING THE EDITING KEYS

You may change the effect of pressing an editing, cursor-moving, or control key by redefining the code transmitted when the key is pressed. The new code may be one normally sent by one of the other editing, cursor-moving, or control keys or may be one used by a particular application (Table 3-16).

To program an editing key, display setup screen 3 (paragraph 2.2.3) and move cursor to key that is to be programmed, or enter the sequence.

ESC **0** m a b c

where m denotes the key to be programmed* (see Table 3-16)
a,b,c the hex codes for the desired effect. NOTE: if a sequence is less than three keys long, "b" and/or "c" are "null" .

NOTE

To return all editing keys to their default values, enter Set-Up and press SHIFT/D

FOR EXAMPLE

to program the DOWN arrow key to "cursor down" in WordStar™, enter the sequence

ESC 0 A CTRL X NUL

To program the SHIFT/PAGE key to use 132 column display, enter the sequence

ESC 0 o ESC . 6

Table 3-16. Program Codes for Editing and Cursor Keys

Edit Keys	Normal	Shift	Control	Shift Control
CE	R	r		
PAGE	O	o		
PRINT	H	h		
SEND	P	p		
ENTER	S	s		
TAB (Main Pad)	E	e		
TAB (Numeric Pad)	Q	q		
BACK TAB	F	f		
CURSOR UP	B	b		
CURSOR DOWN	A	a		
CURSOR LEFT	C	c		
CURSOR RIGHT	D	d		
HOME/CLEAR	@	G	`	g
INS/DEL CHAR	I	J	i	j
INS/DEL LINE	K	L	k	l
ERASE LINE/PAGE	M	N	m	n

3.10 SETTING THE TIME

The time of day may be set in one of two ways, by going into Set-Up (Screen 3) or by entering the following sequence

ESC . C 1 N HH MM

where N = meridiem A = AM, P = PM
HH = hour, two digits: 01 to 12
MM = minutes two digits: 00 to 59

NOTE: Time will display in 24 hour form: 1:15 PM is displayed as 1:13p.

3.10.1 Host Request for Time-of-Day

The host may request the time-of-day by sending to the terminal the sequence

ESC . C 2

The terminal responds

N HH MM CR

where N, HH, and MM are the meridiem, hour, and minutes, as above.

3.11 Windows

3.11.1 Screen Configuration

The screen can be divided into rectangular areas called *Screen Configurations (viewports)* by using the Window Setup screen (paragraph 2.2.3). Use the Define Window setup screen to select the desired configuration. A maximum of eight screen configurations are available for selection. Figure 3-9 shows all possible combinations of screen configuration layout.

NOTE

After power-on or initiation of Set Default Values, screen configuration 1 is assumed until a different screen configuration type is selected.

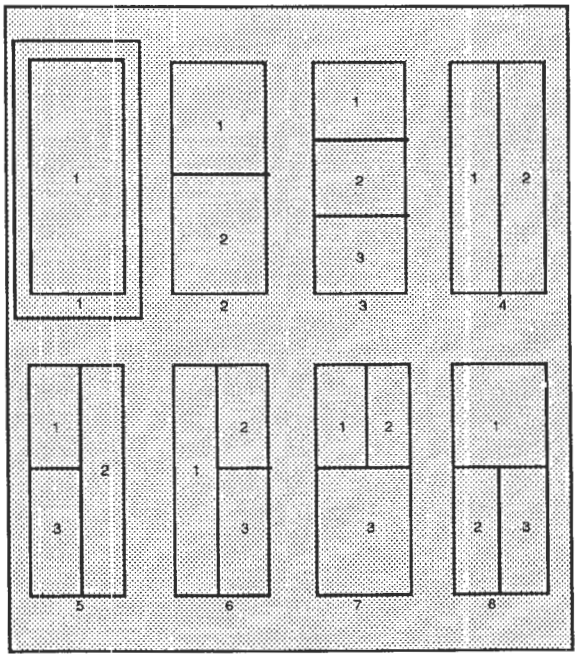


Figure 3-9. Screen Configuration (Viewport) Types

A viewport on the screen is defined as follows: Parameters Dv and Wv specify the depth and width of the viewport, respectively. Parameters Rv and Cv specify the row and column of the viewport, respectively. Since Rv and Cv represent offset values, they are one less than the absolute row and column numbers of the viewport origin. For example, to place the viewport origin in the top left corner of the screen, specify Rv=0 and Cv=0. Figure 3-10 shows the relationship between the viewport and partition.

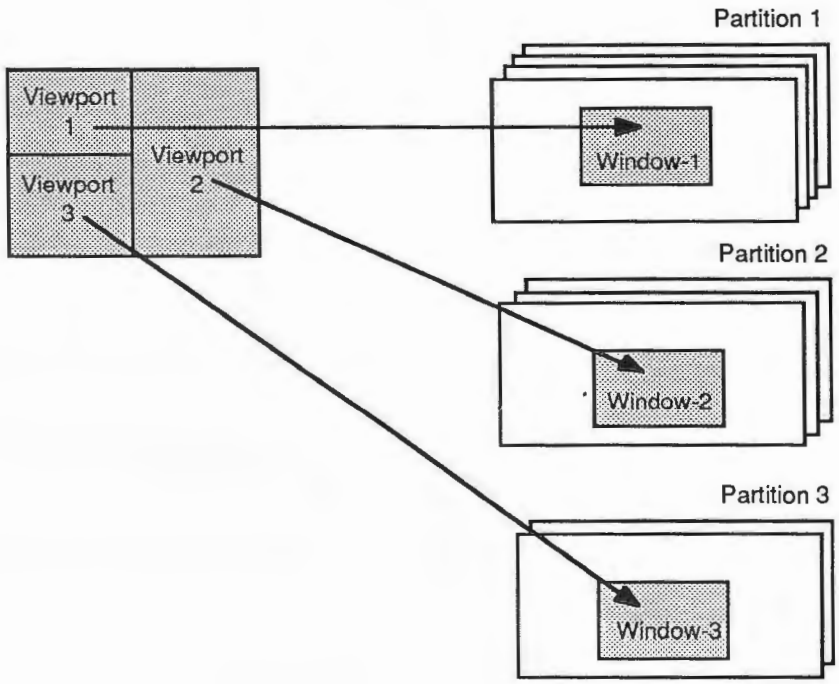
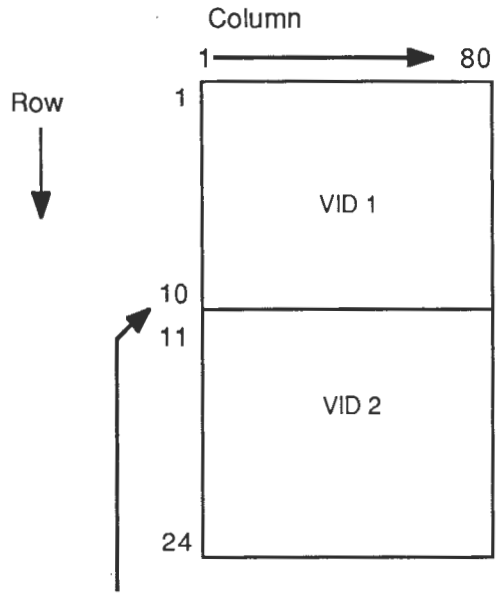


Figure 3-10. Viewport/Partition Relationship

Figure 3-11 is an example of a program for making a screen configuration (type 2).



In the vertical dimension, viewports should occupy adjacent rows.

For viewport 1: Dv = 10, Wv = 80, (Rv = 00, Cv = 00)
For viewport 2: Dv = 14, Wv = 80, (Rv = 10, Cv = 00)

Create Viewport:

Format:	ESC V A Vt	Vid Vdh Vdl Vwh Vwl Vid Vdh Vdl Vwh Vwl Vid Vdh Vdl Vwh Vwl
Parameter:	Vt:	Viewport Type (1 thru 8)
	Vid:	Viewport ID (1 thru 3)
	Vdh, Vdl:	Viewport Depth (Dv)
	Vwh, Vwl:	Viewport Width (Wv)

Use the Table 3-18 to obtain the hexadecimal values for **ESC V A, Vt** and **Vid**.
Also use 2-Byte Parameter Table 3-17 to obtain the hexadecimal values for the depth and width of two viewports.
Your coding should look like this:

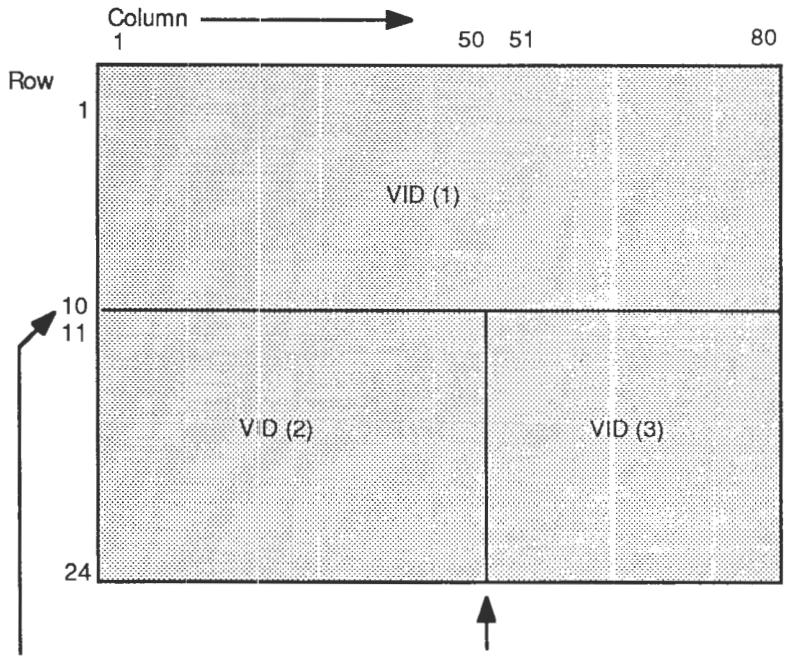
```
1B 56 41 22  21 20 2A 22 30
             22 20 2E 22 30
```

Figure 3-11. Example of Screen Configuration (Type 2)

Table 3-17. Two-Byte Parameter Values

Row Col	Hex Code	Graphic	Row Col	Hex Code	Graphic	Row Col	Hex Code	Graphic
0	20, 20	Sp Sp	30	20, 3E	Sp >	60	21, 3C	! <
1	20, 21	Sp !	31	20, 3F	Sp ?	61	21, 3D	! =
2	20, 22	Sp "	32	21, 20	! Sp	62	21, 3E	! >
3	20, 23	Sp #	33	21, 21	! !	63	21, 3F	! ?
4	20, 24	Sp $	34	21, 22	! "	64	22, 20	" Sp
5	20, 25	Sp %	35	21, 23	! #	65	22, 21	" !
6	20, 26	Sp &	36	21, 24	! $	66	22, 22	" "
7	20, 27	Sp '	37	21, 25	! %	67	22, 23	" #
8	20, 28	Sp (	38	21, 26	! &	68	22, 24	" $
9	20, 29	Sp)	39	21, 27	! '	69	22, 25	" %
10	20, 2A	Sp *	40	21, 28	! (	70	22, 26	" &
11	20, 2B	Sp +	41	21, 29	!)	71	22, 27	" '
12	20, 2C	Sp ,	42	21, 2A	! *	72	22, 28	" (
13	20, 2D	Sp -	43	21, 2B	! +	73	22, 29	")
14	20, 2E	Sp .	44	21, 2C	! ,	74	22, 2A	" *
15	20, 2F	Sp /	45	21, 2D	! -	75	22, 2B	" +
16	20, 30	Sp 0	46	21, 2E	! .	76	22, 2C	" ,
17	20, 31	Sp 1	47	21, 2F	! /	77	22, 2D	" -
18	20, 32	Sp 2	48	21, 30	! 0	78	22, 2E	" .
19	20, 33	Sp 3	49	21, 31	! 1	79	22, 2F	" /
20	20, 34	Sp 4	50	21, 32	! 2	80	22, 30	" 0
21	20, 35	Sp 5	51	21, 33	! 3	81	22, 31	" 1
22	20, 36	Sp 6	52	21, 34	! 4	82	22, 32	" 2
23	20, 37	Sp 7	53	21, 35	! 5	83	22, 33	" 3
24	20, 38	Sp 8	54	21, 36	! 6	84	22, 34	" 4
25	20, 39	Sp 9	55	21, 37	! 7	85	22, 35	" 5
26	20, 3A	Sp :	56	21, 38	! 8	86	22, 36	" 6
27	20, 3B	Sp ;	57	21, 39	! 9	87	22, 37	" 7
28	20, 3C	Sp <	58	21, 3A	! :	88	22, 38	" 8
29	20, 3D	Sp =	59	21, 3B	! ;	89	22, 39	" 9
						90	22, 3A	" :
						91	22, 3B	" ;
						92	22, 3C	" <
						93	22, 3D	" =
						94	22, 3E	" >
						95	22, 3F	" ?
						96	23, 20	# Sp
						.	. .	
						.	. .	
						.	. .	
						255	27, 3F	' ?

Another example of a program for making a screen (type 8) is shown in Figure 3-12.



For viewport 1: Dv = 10, Wv = 80, (Rv = 00, Cv = 00)
For viewport 2: Dv = 14, Wv = 50, (Rv = 10, Cv = 00)
For viewport 3: Dv = 14, Wv = 30, (Rv = 10, Cv = 50)

Use Table 3-18 to obtain the hexadecimal values for **ESC V A , V t and Vid.** Also, use Table 3-17 to obtain the hexadecimal values for the three viewports. Your coding should look like this:

1B 56 41 28 21 20 2A 22 30
22 20 2E 21 32
23 20 2E 20 3E

Figure 3-12. Example of Screen Configuration (Type 8)

3.11.2 Partition/Page

Each viewpoint has an independent character buffer called a *partition*. Data in a partition can be organized into fields having different attributes, such as protected, unprotected, display, non-display, etc. Up to three partitions can be created. Each partition identifier (PID) has a corresponding viewport identifier (VID) and all data in that partition are displayed in the corresponding viewport.

Each partition can have up to four blocks of data called *pages*, with each page having a unique page identifier (GID) from 1 to 4. All pages with the same partition must have the same dimensions (rows and columns). The buffer addresses for each page are also controlled independently (in the same way as the partition). If the partition contains only a single page, the partition can be called a page and vice versa.

An area of the page equivalent in size to the viewport is called a *window* and only one window exists for a page. You can select the window to be displayed on the viewport either from the keyboard or from the host system.

Figure 3-13 shows the relationship between the partition, page, viewport, and window. Figure 3-14 shows the windowing operation of the display station.

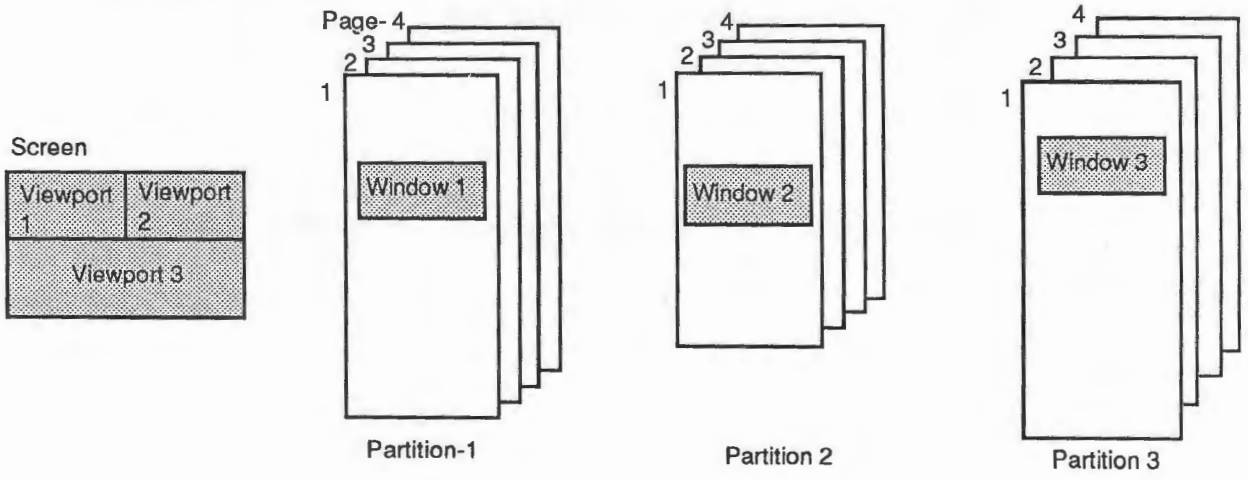
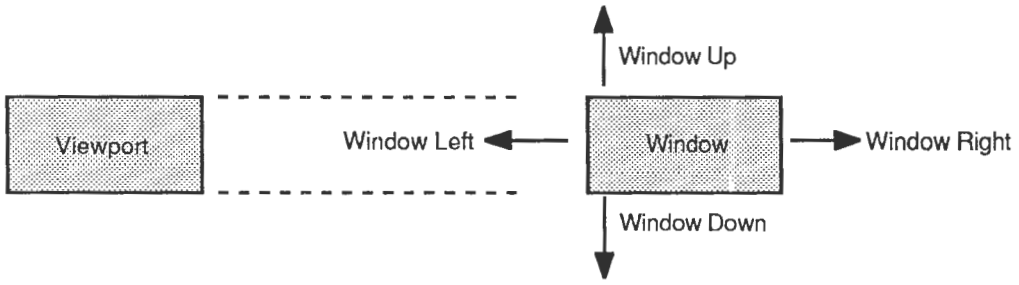


Figure 3-13. Partition/Page/Viewport/Window Relationship

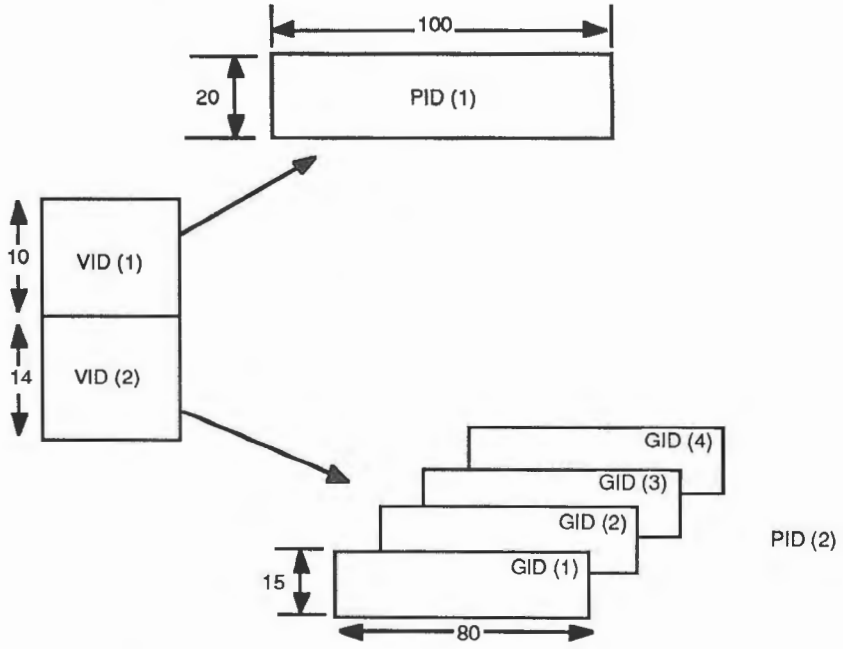


Notes:

1. After power-on, only one partition (4 pages) is assumed; it has the same dimensions as the screen.
2. The row/column values defining the page width/depth are in the range from 1 to 255.
3. The character buffer can hold a maximum of 7680 characters. For example, in the case of the screen configuration type 1, four pages with 24 rows by 80 columns or one page with 96 rows by 80 columns is allowed in the character buffer.

Figure 3-14. Windowing Operation of Display Station

A program example for making a partition for the screen configuration (type 2) previously explained is shown in Figure 3-15.



Assumptions:

Partition depth for partition ID 1 = 20,
Partition width for partition ID 1 = 100,
Number of pages for partition ID 1 = 1,
Partition depth for partition ID 2 = 15,
Partition width for partition ID 2 = 80,
Number of pages for partition ID 2 = 4.

Create a Partition

Format:	ESC V B	Pid Pdh Pdl Pwh Pwl Pg Pid Pdh Pdl Pwh Pwl Pg Pid Pdh Pdl Pwh Pwl Pg
Parameter:	Pid:	Partition ID (1 thru 3)
	Pdh, Pdl:	Page Depth (1 thru 255)
	Pwh, Pwl:	Page Width (1 thru 255)
	Pg:	No. of Pages in the Partition (1 thru 4)

Use Table 3-18 to obtain the hexadecimal values for **ESC V B, Pid** and **Pg.** Also, use Table 3-17 to obtain the hexadecimal values for the depth and width of two partitions/pages. Your coding should look like this:

1B 56 42 21 20 34 23 24 21
22 20 2F 22 30 24

Figure 3-15. Program Example for Type 2

3.11.3 Window Commands

A window must be defined for each page of a partition. *Windowing* refers to the movement of the window along the page. As the window moves toward the top of the page, the data is moved down on the viewport. As the window moves toward the left margin of the page, the data is moved to the right on the viewport. The window can be moved up, down, left, or right on the page by:

The Up, Down, Left, and Right keys
The host program sending the Set Window Position, Window Up, Window Down, Window Right, and Window Left commands.

Table 3-18. One-Byte Parameter Values

Decimal	Hex Code	ASCII	Decimal	Hex Code	ASCII	Decimal	Hex Code	ASCII
1	20	Space	31	3E	>	61	5C	\
2	21	!	32	3F	?	62	5D	]
3	22	"	33	40	@	63	5E	^
4	23	#	34	41	A	64	5F	_
5	24	$	35	42	B	65	60	`
6	25	%	36	43	C	66	61	a
7	26	&	37	44	D	67	62	b
8	27	'	38	45	E	68	63	c
9	28	(	39	46	F	69	64	d
10	29	)	40	47	G	70	65	e
11	2A	*	41	48	H	71	66	f
12	2B	+	42	49	I	72	67	g
13	2C	,	43	4A	J	73	68	h
14	2D	-	44	4B	K	74	69	i
15	2E	.	45	4C	L	75	6A	j
16	2F	/	46	4D	M	76	6B	k
17	30	0	47	4E	N	77	6C	l
18	31	1	48	4F	O	78	6D	m
19	32	2	49	50	P	79	6E	n
20	33	3	50	51	Q	80	6F	o
21	34	4	51	52	R	81	70	p
22	35	5	52	53	S	82	71	q
23	36	6	53	54	T	83	72	r
24	37	7	54	55	U	84	73	s
25	38	8	55	56	V	85	74	t
26	39	9	56	57	W	86	75	u
27	3A	:	57	58	X	87	76	v
28	3B	;	58	59	Y	88	77	w
29	3C	<	59	5A	Z	89	78	x
30	3D	=	60	5B	[	90	79	y
						91	7A	z
						92	7B	{
						93	7C	|
						94	7D	}
						95	7E	~

3.11.4 Window Definitions

Windowing is implemented by use of the following commands.

This command is used to create/define the viewports that are required for the user's application program. When the viewports are redefined, all data in the character buffer is cleared to nulls. All required viewports in relation to the viewport type must be defined at the same time. When less than three viewports are defined by this command, unnecessary parameter sequence <Vid.Vdh.....Vwl> should be eliminated from the parameter list. After creation of the viewports, each viewport has one page with the same dimension of the viewport. If the page size is not suitable for the user's application, the host program must send the Create Partition/Page command.

1. Create Viewport

Format: ESC V A Vt Vid Vdh Vdl Vwh Vwl
Vid Vdh Vdl Vwh Vwl
Vid Vdh Vdl Vwh Vwl

Parameter:
Vt: Viewport Type (1 thru 8) (Table 3-18)
Vid: Viewport ID (1 thru 3) (Table 3-18)
Vdh, Vdl: Viewport Depth (Dv) (Table 3-17)
Vwh, Vwl: Viewport Width (Wr)(Table 3-17)

2. Create Partition/Page

This command is used to create the pages and partitions associated with the viewports that are required for the user's application. When the pages and partitions are redefined, all data in the character buffer are cleared to nulls. The depth and width of the partition must be equal to or greater than the depth and width of its viewport respectively. When less than three partitions are defined by this command, unnecessary parameter sequence <Pid.Pdh.Pdl.Pwh.Pwl.Pg> should be eliminated from the parameter list.

Format: ESC V B Pid Pdh Pdl Pwh Pwl Pg
Pid Pdh Pdl Pwh Pwl Pg
Pid Pdh Pdl Pwh Pwl Pg

Parameter:
Pid: Partition ID (1 thru 3) (Table 3-18)
Pdh, Pdl: Page Depth (1 thru 255) (Table 3-17)
Pwh, Pwl: Page Width (1 thru 255) (Table 3-17)
Pg: No. of pages in Partition (1 thru 4) (Table 3-18)

3. Select Active Partition

This command is used to specify the active partition to the selected partition and to move the cursor to the CCA in the newly-activated partition.

Format: ESC V E Pid

Parameter: Pid: Partition ID (1 thru 3) – Table 3-18.

4. Select Active Page

This command is used to determine which page is to be displayed on the screen.

Format: ESC V F Gid

Parameter: Gid: Page ID (1 thru 4) - Table 3-18.

5. Jump Partition

This command moves the cursor from the viewport of the currently-activated partition to the viewport of the partition with the next higher viewport identifier (VID) value on the same screen. If no higher VID value exists, the cursor goes to the viewport with the lowest VID value. The page and partition associated with the viewport to which the cursor moves become the active page and partition. The cursor is placed at its last position for that page/partition. If only one viewport exists on a screen (viewport type = 1), this command has no effect.

Format: ESC V G

6. Window Position

This command is used to move the window to a specified position in the page. If the window moves out of the page, the command error condition occurs.

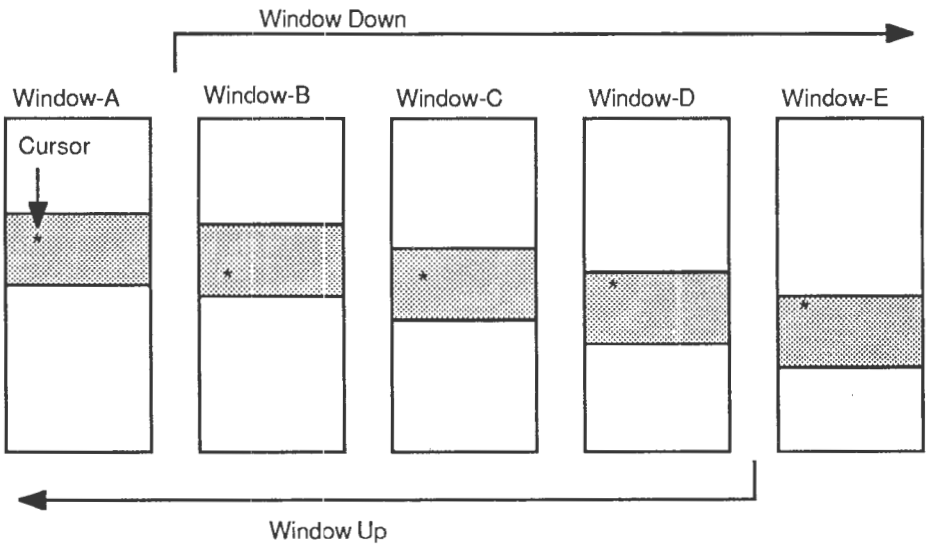
Format: ESC V H Prh Prl Pch Pcl

Parameter: Prh, Prl: Window Start Row Number (Table 3-17)
Pch, Pcl: Window Start Column Number (Table 3-17)

7. Window Up

This command is used to move the cursor down with the page until it is at the bottom of the viewport. Windowing of the page may continue, but the current cursor position is moved up the page so that the screen cursor stays in the viewport. If the page has the same dimension as the window/viewport, this command has no effect (see Figure 3-16)

Format: ESC V I



When you window UP/Down between window positions B and D, the cursor remains unchanged within the page, and the cursor itself moves vertically within the viewport. However, when windowing continues past these three positions (to A or E, for example), the display station automatically moves the cursor to a new position (in the same column) so that the displayed cursor remains within the viewport.

Figure 3-16. Effect of Window Up/Down on Current Address

8. Window Down

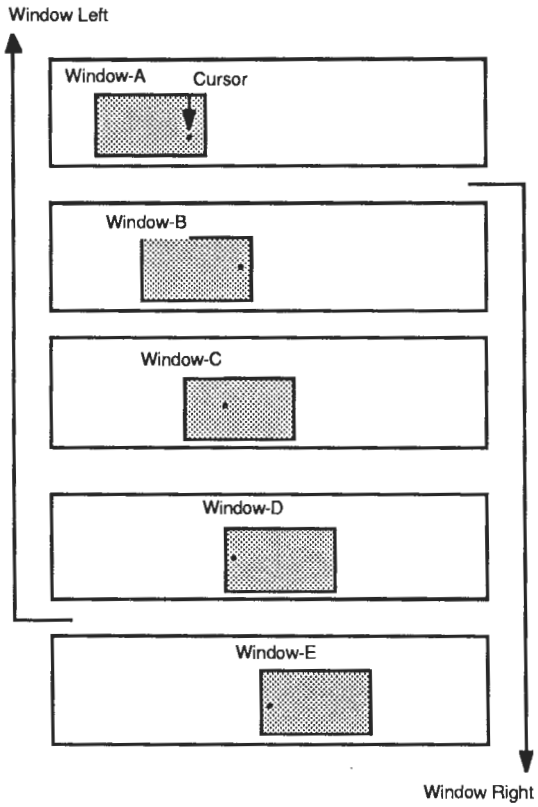
This command is used to move the cursor up with the page until it is at the top of the viewport. Windowing of the page may continue, but the current cursor position is moved down the page so that the screen cursor stays in the viewport. If the page has the same dimension as the window/viewport, this command has no effect (see Figure 3-16).

Format: ESC V J

9. Window Right

This command is used to move the cursor left with the page until it is at the left edge of the viewport. Windowing of the page may continue, but the current cursor position is moved to the right so that the screen cursor stays in the viewport (see Figure 3-17).

Format: ESC V K



When you window left/right between the window positions B and A, the cursor remains unchanged within the page. However, when windowing continues past these three positions (to A or E, for example), the display station automatically moves the cursor to a new position (in the same row) so that the displayed cursor remains within the viewport.

Figure 3-17. Effect of Window Left/Right on Current Address

10. Window Left

This command is used to move the cursor right with the page until it is at the right edge of the viewport. Windowing of the page may continue, but the current cursor position is moved to the left so that the screen stays in the viewport (Figure 3-17).

Format: ESC V L

11. Print Viewport

When this command is received, data in the viewport of the active page is transferred to the auxiliary port.

Format: ESC V N

12. Print Screen

When this command is received, data in the whole screen is transferred to the auxiliary port.

Format: ESC V M

13. Print Page

When this command is received, data from home to cursor is printed.

Format: ESC P
(same as Local Print Command)

14. Clear Partition

When this command is received, all pages (including all attributes) in the active partition are cleared to nulls, and the cursor in all pages is set to the first character position of each page. Column tab stops are also cleared.

Format: ESC V O

15. Clear All Partition

When this command is received, all partitions (including all attributes) are cleared to nulls, and the cursor in all pages is set to the first character position of each page. Column tab stops are also cleared.

Format: ESC V P

16. Set Cursor Address

Parameters are listed in Table 3-19. This command is used to move the current cursor address to any position in the page.

Format: ESC = Pr Pc
(same as Cursor Position Command)

17. Window Notes

a. Double Size Characters – Double size characters may be displayed only in Viewports 1, 2, 3; in Viewport 3 of type 7 and in Viewport 1 of type 8.

b. Line Lock and Split Screen – Line lock and split screen may be used only in Viewport 1.

c. Proportional Spacing – Proportional spacing can be used only in Viewport types 1 through 3.

d. Window Column Display – When a window is moved by Window Right or Left commands, or by cursor movement, two columns at a time will be moved into the window.

3.12 DESIGNING CHARACTERS

Designing your own character(s) consists of downloading the type of character set (either ASCII or Graphics), designing the character, and loading the defined character.

Remember, the defined characters are stored in a volatile memory. They only remain in the character set until you

a. power off terminal
b. reload character set
c. change emulation mode
d. change between a 26-line or 44-line display, or
e. change between 80-column or 132-column display

3.12.1 Download and Character Design Sequence

Enter the sequence ESC [& a0 ; b0 | p1 p2.....P32 CR

Where: a0 = character set to be loaded
0 (30H) = ASCII Character Set
1 (31H) = Graphics Character Set

b0 = Define character position that is to be downloaded
(1- to 3-byte parameters in ASCII coded format)
For example, if character position 32 (20H) is selected for downloading, use parameters 33H (ASCII=3) and 32H (ASCII=2).

| = command identifier

p1 p2....p32 = 32-byte parameters, ranging from 40H to 5FH that defines character generator bit map data

CR (RETURN) terminates the downloading sequence. Command aborts if CR is sent before all 32 values of character string (p1 p1....p32) are included.

3.12.2 Character Dimensions

The matrix format of the screen defines the dimensions of the character cell.

ASCII Characters

a. 26-Line, 80-Column Mode	Screen displays 8 x 14 character matrix with 3-dot descenders in cell measuring 10 x 16 pixels.
b. 26-Line, 132-Column Mode	Screen displays 5 x 14 character matrix with 3-dot descenders in cell measuring 6 x 16 pixels.
c. 44-Line, 80-Column Mode	Screen displays 8 x 7 character matrix in cell measuring 10 x 9 pixels.

d. 44-Line, 132-Column Mode — Screen displays 5 x 7 character matrix in cell measuring 6 x 9 pixels.

Graphics Characters

a. 26-Line, 80-Column Mode — Displays an entire matrix in cell measuring 10 x 16 pixels.

b. 26-Line, 132 Column Mode — Displays an entire matrix in cell measuring 6 x 16 pixels.

c. 44-Line, 80-Column Mode — Displays an entire matrix in cell measuring 10 x 9 pixels.

d. 44-Line, 132-Column Mode — Displays an entire matrix in cell measuring 6 x 9 pixels.

3.12.3 Character Design Procedure

The procedure for designing characters is as follows:

a. Map the character on a grid representing the cell matrix.

b. Mark the grid with 1's and 0's representing the bit pattern.

c. Convert the bit pattern of each horizontal row of the matrix into hexadecimal equivalents and combine them in a string that describes the character.

As an example of this procedure consider the design of the capital letter F in a 10 x 16 cell, shown in Figure 3-18.

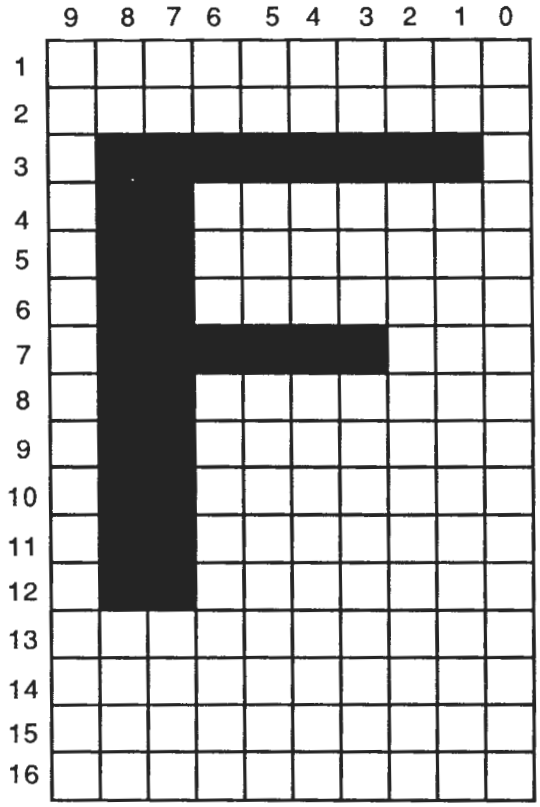
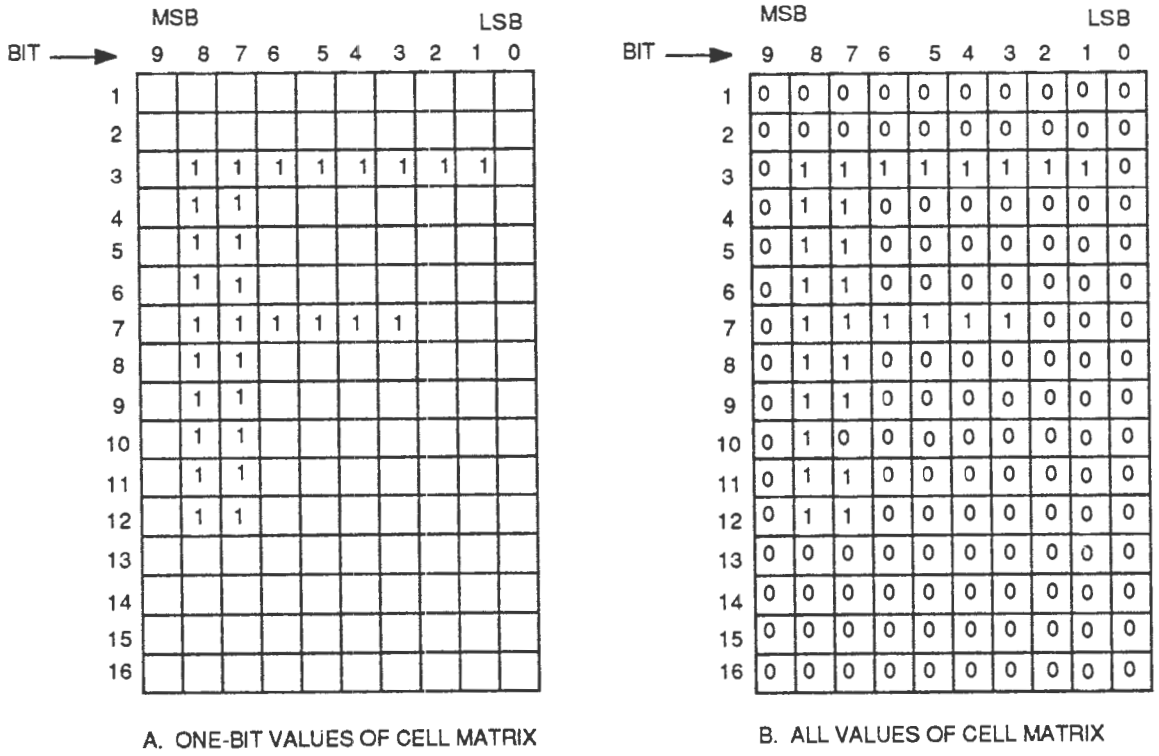


Figure 3-18. Example of Defined Character

a. Fill the appropriate boxes on the grid with 1's to delineate the character (Figure 3-19A).

b. Fill all of the remaining boxes of the grid with 0's (Figure 3-19B).

At this point, a binary value exists for each of the 16 horizontal lines of the grid.



BIT →	MSB 9	8	7	6	5	4	3	2	1	LSB 0
1										
2										
3		1	1	1	1	1	1	1	1	
4		1	1							
5		1	1							
6		1	1							
7		1	1	1	1	1	1			
8		1	1							
9		1	1							
10		1	1							
11		1	1							
12		1	1							
13										
14										
15										
16										

A. ONE-BIT VALUES OF CELL MATRIX

BIT →	MSB 9	8	7	6	5	4	3	2	1	LSB 0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	1	1	1	1	1	1	1	1	0
4	0	1	1	0	0	0	0	0	0	0
5	0	1	1	0	0	0	0	0	0	0
6	0	1	1	0	0	0	0	0	0	0
7	0	1	1	1	1	1	1	0	0	0
8	0	1	1	0	0	0	0	0	0	0
9	0	1	1	0	0	0	0	0	0	0
10	0	1	0	0	0	0	0	0	0	0
11	0	1	1	0	0	0	0	0	0	0
12	0	1	1	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0

B. ALL VALUES OF CELL MATRIX

Figure 3-19. Delineating a Character (Example)

Now, one row at a time, convert these binary values to hex equivalents that define that respective row for the terminal. Divide each row into 4 nibbles (Figure 3-20) and assign a hex value (Table 3-19) to each respective row. As an example of the 10 x 16 cell, the least significant bit (LSB) of nibble 1 is the most significant bit (MSB) of the row. The LSB of nibble 2 is bit 5 of the row.

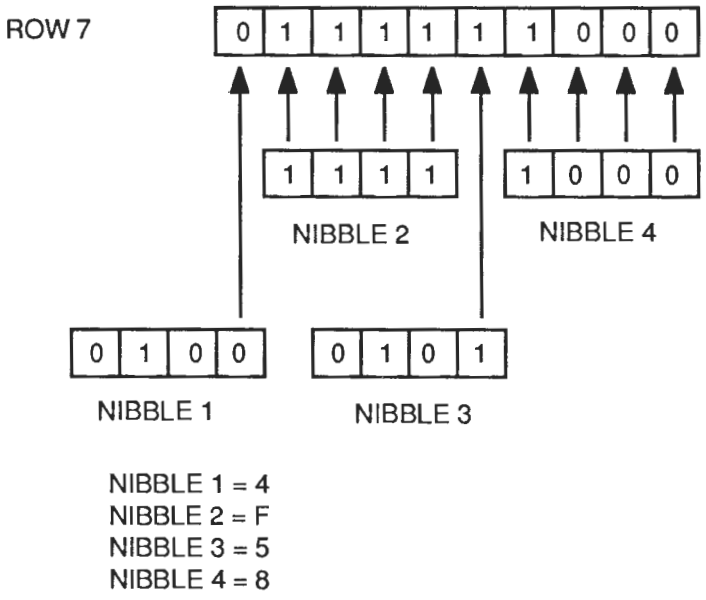


Figure 3-20. Example of 4-Nibble Row Construction

Table 3-19. Hex Equivalents

Bit Pattern	Hex Equivalent	Bit Pattern	Hex Equivalent
0 0 0 0	0	1 0 0 0	8
0 0 0 1	1	1 0 0 1	9
0 0 1 0	2	1 0 1 0	A
0 0 1 1	3	1 0 1 1	B
0 1 0 0	4	1 1 0 0	C
0 1 0 1	5	1 1 0 1	D
0 1 1 0	6	1 1 1 0	E
0 1 1 1	7	1 1 1 1	F

After delineating a character, write down the hex values for each line as described in the character 7 example of Figure 3-21.

	MSB									LSB	
BIT →	9	8	7	6	5	4	3	2	1	0	**Hex Equivalents (4 Nibbles)**
1	0	0	0	0	0	0	0	0	0	0	40 (@) 40 (@)
2	0	0	0	0	0	0	0	0	0	0	40 (@) 40 (@)
3	0	1	1	1	1	1	1	1	1	0	4F (O) 5E (^)
4	0	1	1	0	0	0	0	0	0	0	4C (L) 40 (@)
5	0	1	1	0	0	0	0	0	0	0	4C (L) 40 (@)
6	0	1	1	0	0	0	0	0	0	0	4C (L) 40 (@)
7	0	1	1	1	1	1	1	0	0	0	4F (O) 58 (X)
8	0	1	1	0	0	0	0	0	0	0	4C (L) 40 (@)
9	0	1	1	0	0	0	0	0	0	0	4C (L) 40 (@)
10	0	1	1	0	0	0	0	0	0	0	4C (L) 40 (@)
11	0	1	1	0	0	0	0	0	0	0	4C (L) 40 (@)
12	0	1	1	0	0	0	0	0	0	0	4C (L) 40 (@)
13	0	0	0	0	0	0	0	0	0	0	40 (@) 40 (@)
14	0	0	0	0	0	0	0	0	0	0	40 (@) 40 (@)
15	0	0	0	0	0	0	0	0	0	0	40 (@) 40 (@)
16	0	0	0	0	0	0	0	0	0	0	40 (@) 40 (@)

Figure 3-21. Row Values

The result is a 32-character string defining the designed character (from top to bottom). To load the capital F into position 64 of the ASCII character set, the entire sequence is:

ESC [& 0 ; 6 4 | @ @ @ @ O ^ L @ L @ L @ O X L @ L
@ L @ L @ L @ @ @ @ @ @ @ @ @ CR

SECTION IV
EMULATING OTHER TERMINALS

INTRODUCTION

The *Ampex 270* terminal can emulate a number of terminals made by other manufacturers. That is, it mimics the operating characteristics of that terminal, especially by using the same command sequences.

To choose a particular emulation,

1. Press SET-UP (SHIFT/NO SCROLL)
2. Move the cursor to *compatibility of screen 1.*
3. Press Spacebar until the desired emulation appears.
4. Press SHIFT/S to save the choice.

This section explains important features of operating the *Ampex 270* while emulating another terminal. The section is divided by the emulated terminals' manufacturers.

Escape sequences and control codes for each emulation are given in Appendix D.

Manufacturer	Terminal Emulated	Setting
ADDS	Viewpoint A1	VP-A1
	Viewpoint A2	VP-A2
Ampex	230 plus	Ampex 230 plus
Lear Siegler	ADM5	ADM5
TeleVideo	950	TeleVideo 950
	955	TeleVideo 955
Wyse	WY-50	WY-50
	WY-50 Plus	WY-50 Plus
	WY-60	WY-60

NOTE: In those emulations where functions keys may be reprogrammed, function key contents are stored in nonvolatile memory and will be in effect if the terminal is turned off and then on. However, changing the emulation returns all function key sequences to their default values.

4.1 ENHANCED EMULATION

The *Ampex 270* offers enhanced operation in ALL emulations. Enhanced operation means the emulation has features available in the native mode: programmable function and editing keys, 132 column line length, and graphics character capability.

To operate in enhanced emulation, in General Set-Up,

Set Enhance Mode = On

Column width is changed in Display Set-Up.

NOTE: Vis a vis normal emulation, enhanced emulation has the important effect of adding features otherwise unavailable in an emulation. But a feature may be available in normal emulation (see Table 4-1). In this situation, the capability is unchanged by enhanced emulation.

Table 4-1. Normal versus Enhanced Emulation

Emulation	Graphics Normal	Enhanced	Program Function Keys Normal	Enhanced
VP-A1	No	like WY-50	No	Yes
VP-A2	No	like WY-50	No	Yes

Note further: there are 32 function keys available (16 Fn, 16 SHIFT/Fn) in each emulation.

Function Keys

Pressing a function key transmits a three-character sequence:

Lead-in Code	ASCII Code	Terminator Code
SOH	m	CR

where "m" is the value associated with the function key. The value of "m" for each key is given in Table 4-2.

Table 4-2. Function Key ASCII Code Values

Function Key	If Fn, m is	If SHIFT/Fn, m is
F1	@	'
F2	A	a
F3	B	b
F4	C	c
F5	D	d
F6	E	e
F7	F	f
F8	G	g
F9	H	h
F10	I	i
F11	J	j
F12	K	k
F13	L	l
F14	M	m
F15	N	n
F16	O	o

Note: The capability to program function or editing keys is available in certain normal emulations. The procedure for programming function keys in normal emulation is given below in the section discussing the emulation. The procedure for programming function and command keys in enhanced emulation is given in Section III.

4.2 ADDS

4.2.1 Viewpoint A1 and A2

Function Keys

Pressing a function key transmits a two-character sequence:

Lead-in Code	ASCII Code
STX	m

where "m" is the value associated with the function key. The value of "m" for each key is given in Table 4-3.

Table 4-3. Viewpoint Function Key Codes

Function Key	STX ...	If SHIFT/Fn, STX ...
F1	1	!
F2	2	"
F3	3	#
F4	4	$
F5	5	%
F6	6	&
F7	7	'
F8	8	(
F9	9	)
F10	:	*
F11	;	+
F12	<	,
F13	=	-
F14	>	.
F15	?	/
F16	@	0

4.3 Ampex

4.3.1 230 plus

Function Commands

In this emulation, a function command may be transmitted by pressing FUNCT/another-key. The sequence transmitted is

SOH (CTRL/A) ASCII code of key CR

Function commands may also be transmitted by pressing a function key. See Table 4-2 for a list of codes transmitted.

Video Attributes of Characters

In this emulation, video attributes of characters may include
- blank (character not displayed)
- flash
- reverse (opposite the background)
- underline
- half-intensity

and with any combinations of these, e.g.,

- underline reverse
- underline reverse flash
- flash half-intensity

A video attribute or combination thereof is denoted by a three-character escape sequence:

ESC G n

where "n" is the value associated with the attribute or combination. The value of "n" associated with attributed is given in Table 4-4

Table 4-4. Video Attribute Escape Sequences

Attribute	Escape Sequence ESC G ...
normal	0
blank	1
flash	2
blank flash	3
reverse	4
blank reverse	5
flash reverse	6
blank flash reverse	7
underline	8
blank underline	9
flash underline	:
blank flash underline	;
reverse underline	<
blank reverse underline	=
flash reverse underline	>
blank flash reverse underline	?
normal H.I.	p
blank H.I.	q
flash H.I.	r
blank flash H.I.	s
reverse H.I.	t
blank reverse H.I.	u
flash reverse H.I	v
blank flash reverse H.I.	w
underline H.I.	x
blank underline H.I.	y
flash underline H.I.	z
blank flash underline H.I.	{
reverse underline H.I.	|
blank reverse underline H.I.	}
flash reverse underline H.I.	~
blank flash reverse underline H.I.	DEL

Special Graphics

Figure 3-1 lists the graphics symbols available in this emulation and the keys used to generate each symbol.

To turn on the graphics characters, enter the sequence **ESC $**

To turn off the graphics characters, enter the sequence **ESC %**

Clearing Data

There are several ways to clear data from the screen and/or host's memory. Table 4-5 lists different ways to clear data.

Note: The default Insert-Character is space. To change the Insert-Character to some other character, enter the sequence

ESC e x

where x denotes the desired (alphabet or numeric) character

NOTE

If Protect (Text) mode is OFF, CLEAR-unprotected commands work like CLEAR-all commands: they clear all characters.

NOTE

If Write-Protect (Text) mode is OFF, CLEAR-unprotected commands clear with full intensity Insert-Characters. If Write-Protect (Text) mode is ON, CLEAR-unprotected commands clear with protected-text video-attribute (Set-Up, Line 1) Insert-Characters.

Table 4-5. Clear Commands

Command	Code Key	Effect
Clear Unprotected to Nulls	ESC : - - -	Clears all unprotected data on the page to null characters.
Clear All to Nulls	ESC * CTRL/CLEAR	Clears all data on the page to null characters, resets Protect Mode and Write-Protect Mode to OFF.
Clear Unprotected to Half Intensity Insert-Character	ESC , - - -	Clears all unprotected data on the page with half-intensity Insert-Character.
Clear Unprotected to Insert-Character	CTRL/X CLEAR ESC + *or* ESC ;	Clears all unprotected data on the page with Insert Character..

Table 4-5. Clear Commands (Continued)

Command	Code	Key	Effect
Clear Field to Spaces	CTRL/X	CE	If PROT OFF, erases all characters (Clear Entry)between the previous tab stop and next tab stop and moves cursor to previous tab stop. If no previous tab stop, erases from column 1. If no next tab stop,erases to end of line. If no tab stops, erases entire line. If PROT ON, erases all characters in the field of unprotect data in which the cursor is located.

Setting the Time

The time of day may be set by entering the following sequence:

ESC **space 1** N HH MM

where N = meridian, A = AM, P = PM
HH = hour, two digits: 01 to 12
MM = minutes, two digits: 00 to 59

For example, to set the time to 1:15 P.M., enter

ESC space 1 P 01 15

Remember, 1:15 PM is displayed as 1:15 p.

Host Request Time-of-Day

The host may request the time-of-day by sending to the terminal the sequence
ESC **space 2**

The terminal responds
N HH MM CR (carriage return)

4.4 950/955

Function Keys

Function commands may also be transmitted by pressing a function key (Fn) or SHIFT/Fn. See Tables 4-6 and 4-7 for a list of codes transmitted.

Table 4-6. Set One Default Function Key Codes

Unshifted Key	Code	Shifted Key	Code
F1	SOH @ CR	F17	SOH ` CR
F2	SOH A CR	F18	SOH a CR
F3	SOH B CR	F19	SOH b CR
F4	SOH C CR	F20	SOH c CR
F5	SOH D CR	F21	SOH d CR
F6	SOH E CR	F22	SOH e CR
F7	SOH F CR	F23	SOH f CR
F8	SOH G CR	F24	SOH g CR
F9	SOH H CR	F25	SOH h CR
F10	SOH I CR	F26	SOH i CR
F11	SOH J CR	F27	SOH j CR
F12	SOH K CR	F28	SOH k CR
F13	SOH L CR	F29	SOH l CR
F14	SOH M CR	F30	SOH m CR
F15	SOH N CR	F31	SOH n CR
F16	SOH O CR	F32	SOH o CR

Table 4-7. Set Two Default Function Key Codes

Unshifted Key	Code	Shifted Key	Code
F1	SOH P CR	F17	SOH p CR
F2	SOH Q CR	F18	SOH q CR
F3	SOH R CR	F19	SOH r CR
F4	SOH S CR	F20	SOH s CR
F5	SOH T CR	F21	SOH t CR
F6	SOH U CR	F22	SOH u CR
F7	SOH V CR	F23	SOH v CR
F8	SOH W CR	F24	SOH w CR
F9	SOH X CR	F25	SOH x CR
F10	SOH Y CR	F26	SOH y CR
F11	SOH Z CR	F27	SOH z CR
F12	SOH [CR	F28	SOH { CR
F13	SOH \ CR	F29	SOH | CR
F14	SOH] CR	F30	SOH } CR
F15	SOH ^ CR	F31	SOH ~ CR
F16	SOH _ CR	F32	SOH [illegible] CR

Programming the Function Keys

The function key set and the function key content may be changed (programmed) by the operator. NOTE: The following "select a function key set" sequence applies to TV955. For TV950 applications, enhancement should be turned on.

To select a function key set, enter the sequence

ESC [7 ; m v

where m denotes the function key set:

m	Set
0	One
1	Two

To program a function key, enter the sequence

ESC | p1 p2 message **CTRL/Y**

where p1 denotes the function key to be programmed (Table 4-8),
p2 denotes where the code will be transmitted (Table 4-9),
message denotes the desired function, and
CTRL/Y is the mandatory termination character.

Table 4-8. Values of p1 for TV950/955 Fn Keys

	TeleVideo 950		TeleVideo 955	
Key	Unshifted	Shifted	Unshifted	Shifted
F1	1	<	1	A
F2	2	=	2	B
F3	3	>	3	C
F4	4	?	4	D
F5	5	@	5	E
F6	6	A	6	F
F7	7	B	7	G
F8	8	C	8	H
F9	9	D	9	I
F10	:	E	:	J
F11	;	F	;	K
F12	G	L	<	L
F13	H	M	=	M
F14	I	N	>	N
F15	J	O	?	O
F16	K	P	@	P

Table 4-9. Values of p2 for TV950/955 Fn Keys

If p2 is	New function code sent to
1	computer (full duplex)
2	screen only (local)
3	computer and screen (half duplex)

The "message" is the desired function: a string of ASCII characters, control codes, and escape sequences. Total memory available for storing new function key codes is 6K bytes. If desired, all storage may be devoted to reprogramming one function key. Be careful when programming: if you make a mistake while typing, you will need to start over.

Note: If "CTRL/Y" is to be part of the message, enter the Bypass Code

CTRL/P

immediately before the CTRL/Y. The Bypass Code denotes that the following code is to be part of the message. As you might expect, you include the Bypass Code itself in the the message in the same way: CTRL/P CTRL/P

FOR EXAMPLE,

ESC	p1	p2	message	CTRL/Y
ESC	1	2	TURN ON PRINTER CR	CTRL/Y

programs F1 to send the message "TURN ON PRINTER" to the host.

Video Attributes

A video attribute or combination thereof is denoted by a three-character escape sequence:

ESC G n

where "n" is the value associated with the attribute or combination. The value of "n" associated with attribute is given in Table 4-10.

Table 4-10 TeleVideo 950/955 Video Attribute Codes

Attribute	Escape Sequence ESC G ...
normal	0
blank	1
flash	2
blank flash	3
reverse	4
blank reverse	5
flash reverse	6
blank flash reverse	7
underline	8
blank underline	9
flash underline	:
blank flash underline	;
reverse underline	<
blank reverse underline	=
flash reverse underline	>
blank flash reverse underline	?

Special Graphics

Figure 4-1 lists the graphics symbols available in this emulation and the key used to generate each symbol.

To turn on the graphics characters,

enter the sequence **ESC $**

To turn off the graphics characters,

enter the sequence **ESC %**

TV955

TV950

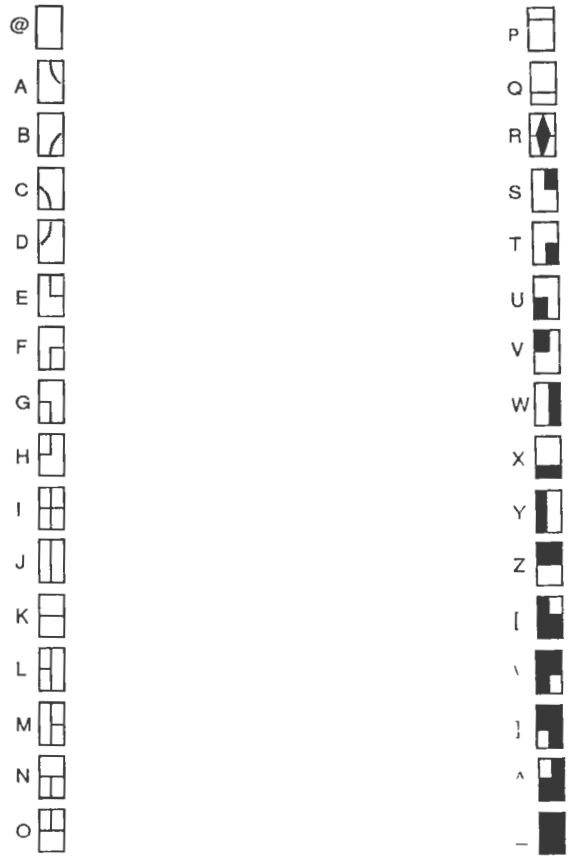


Figure 4-1. TV950/955 Special Graphics

Clearing Data

There are several ways to clear data from the screen and/or host's memory. Table 4-11 lists different ways to clear data in this emulation.

Table 4-11. TeleVideo 950/955 Clear Command Codes

Command	Sequence
Clear Unprotected to Nulls	ESC :
Clear Unprotected to Insert-Characters	ESC ; ESC = CTRL/Z
Clear All to Nulls	ESC *
Clear Unprotected to Write-Protected Spaces 955: Reset protect mode 950: Do not reset protect mode	ESC ,
Clear all to Insert-Characters 955: Reset Protect and Write Protect Mode 950: Do not reset Protect and Write Protect Mode	ESC +

80/132 Columns

When switching between 80 columns and 132 columns the Ampex 270 always clears the screen.

Line Lock

The Ampex 270 does not permit line lock in a split screen display.

Default Settings

Differences in Default Settings are given below:

Setting	Value
Buffer Size	64
Transmit delay	150
Receive Handshake	None
Print Port Baud Rate	9600
Screen Saver Time	10 min.
Top Row	Status Line
Bottom Row	None
Status Line	Underline
Margin Bell	Off

4.5 WYSE

4.5.1 WY-50/WY-50+

Function Keys

Pressing a function key transmits a three-character sequence:

Lead-in Code	ASCII Code	Terminator Code
SOH	m	CR

where "m" is the value associated with the function key. The value of "m" for each key is given in Table 4-12.

Table 4-12 WY-50/WY-50+ Function Key ASCII Code Values

Function Key	If Fn, m is	n is	If SHIFT/Fn, m is	n is
F1	@	0	'	P
F2	A	1	a	Q
F3	B	2	b	R
F4	C	3	c	S
F5	D	4	d	T
F6	E	5	e	U
F7	F	6	f	V
F8	G	7	g	W
F9	H	8	h	X
F10	I	9	i	Y
F11	J	:	j	Z
F12	K	;	k	[
F13	L	<	l	\
F14	M	=	m	]
F15	N	>	n	^
F16	O	?	o	-

Programming the Function Keys

You can change the sequence transmitted by pressing a function key. Function keys can be programmed either in Set-Up or by entering an escape sequence.

To program a function key using an escape sequence, enter the sequence

ESC **z** m seq **DEL**

where m denotes the function key to be programmed (see Table 4-10)
seq denotes the desired code sequence (up to eight characters).
DEL termination delimiter

To program the Label (User) Line with a message for a function key, enter the sequence

ESC **z** n text **CR**

where n denotes the label field (in which the message will appear) for the function key (see Table 4-12)
text denotes the desired message (up to eight characters).
CR termination delimiter

Special Graphics

Figure 4-2 lists the graphics symbols available in this emulation and the key used to generate each symbol. Graphics characters will always be displayed with the selected protect attribute and will be protected if PROT ON is set.

To turn on the graphics characters,
in Set-Up, choose GRAPH ON, or
enter the sequence **ESC H CTRL/B**

To turn off the graphics characters,
in Set-Up, choose GRAPH OFF, or
enter the sequence **ESC H CTRL/C**

Figure 4-2. WY-50/WY-50+/WY-60 Special Graphics

Clearing Data

There are several ways to clear data from the screen and/or host's memory. Table 4-13 lists different ways to clear data in this emulation.

Table 4-13. WY-50 Clear Command Codes

Command	WY-50
Clear Unprotected to Nulls	ESC :
Clear Unprotected to Spaces	ESC ; CTRL/Z
Clear All to Nulls	ESC *
Clear All to Spaces	ESC +
Clear All to Half Intensity Spaces	ESC ,

4.5.2 WY-60

WyseWorks

WyseWorks is not implemented

Blank Underline Attribute

The Ampex 270 does not display the character or the underline.

Default Settings

The Ampex 270 default settings are listed below:

Settings	Value
Primary Port:	Primary Port:
Transmit handshake	DSR
Receive handshake	DTR
Auxiliary Port:	Auxiliary Port:
Transmit handshake	DSR
Receive handshake	DTR

Assign Line Attribute

The following escape sequences are not implemented:

ESC G G
ESC G H
ESC G I
ESC G J

Load Character Set

The character set is always loaded when the display is switched between 80 columns and 132 columns or between 26 lines and 44 lines.

Auto Font Loading

Auto font loading On (**ESC e o**)
The Ampex 270 always loads the default character set.

Auto font loading Off (**ESC e N**)
The Ampex 270 always loads the default character set.

Miscellaneous Differences

1. The display may be split into an upper and lower half; either of which may be active (the scrolling "segment"). PAGE is used (instead of PREV PAGE NEXT) to select the active segment.

2. There is no INSERT/REPLACE key on the *Ampex 270.* Instead,

   to insert,
   press CTRL/CHAR INSERT, or
   enter the sequence **ESC q**

   to replace,
   press SHIFT/CTRL/CHAR INSERT, or
   enter the sequence **ESC r**

4.6 Lear Siegler

4.6.1 ADM5

The effect of the control sequences CTRL/O and CTRL/N depend on the value of Auxiliary/ Keyboard in Keyboard Setup.

If value is	CTRL/O	CTRL/N
Auxiliary/Keyboard = Keyboard	Locks keyboard	Unlocks keyboard
Auxiliary/Keyboard = Auxiliary	Turns Aux port Off	Turns Aux port on

SECTION V
TROUBLESHOOTING

This section explains basic guidelines for the care and feeding of the terminal and for simple troubleshooting should a problem arise in operating the unit.

5.1 MAINTENANCE

If handled carefully, the terminal requires no maintenance.

5.2 TROUBLESHOOTING

If	Check that
the terminal won't turn on	the power switch is on; the AC cord is plugged into the wall; the wall outlet is "live" (plug in a working radio); and the terminal's fuse is not blown (see Figure 1-4).
The terminal doesn't seem to be communicating with the host	the I/O cable between host and terminal is properly connected(to the terminal's primary port); data entry mode is conversation; the primary port is working properly (see primary port test).
nothing is displayed when you type	the keyboard cable is plugged into the display unit; the keyboard is unlocked (To unlock, press CTRL/SHIFT/RESET.
the display is jumbled	the baud rate of the primary port matches that of the host; the number of data bits matches that of the host; the parity matches that of the host; the screen is NOT set for Monitor mode (to turn off: press CTRL/2)

If	Check that
you can't seem to print	the printer's port and terminal's auxiliary port are the same type (e.g., RS423 or parallel port); the I/O cable between terminal and printer is properly connected (and pin signal assignments match); the number of data bits matches that of the printer; the parity matches that of the printer; the number of stop bits matches that of the printer; the baud rate is set properly (see Section III); the printer port is working properly (see printer port test below); the printer test below works.

5.3 PRIMARY PORT TEST

To check that the primary port is functioning properly,

1. Make sure the terminal is set to Conversational and Full Duplex.

2. Connect pin 2 of the primary port to pin 3 of the primary port.

3. Type in text from the keyboard.

4a. If the primary port is working properly, the text is displayed as expected on the terminal screen.

4b. If the port is not working properly, text will not be displayed as expected. If the port is not working properly, consult your Ampex Service Representative.

5.4 PRINTER PORT TEST

To check that the printer port is functioning properly,

1. Make sure the terminal is set to Conversational and Full Duplex.

2. Connect pin 2 of the primary port to pin 3 of the printer port.

3. Type in 2 lines of text from the keyboard.

4. Press the PRINT key.

5a. If the auxiliary port is working properly, the "printed" text is displayed on the terminal screen, immediately below the typed text. The printed text should be identical to the typed text, except for a blank line separating the first and second lines of printed text.

5b. If the port is <u>not</u> working properly, text will not be displayed as described above. If the port is not working properly, consult your Ampex Service Representative.

5.2.1 PRINTING TEST

To check for proper communication between the terminal and a printer attached to it, use the following test.

NOTE: before doing the test, make sure the terminal is NOT connected to a host or to a modem.

1. In General Set-Up , choose BLOCK mode.

2. Press SHIFT/S to save the choice.

3. Type in several lines of text.

4. Press the PRINT key to print the text. If the printer prints all data from the HOME position to the cursor position, everything is okay. If something else happens, refer to the Troubleshooting list above.

APPENDIX A
SPECIFICATIONS

The following is a list of operating characteristics and specifications for the *Ampex 270* Video Display Terminal.

Display Screen

14-inch screen with flat profile,non-glare faceplate
White, amber or green phosphor
70 Hz refresh rate

Displayed Character Set

238 displayable characters
- 96 ASCII characters
- 32 control characters
- 64 block graphic characters
- 15 line graphic characters
- 37 national characters

Character Typestyle

The character matrix is as follows:
- 80 x 26 mode - 8 x 14 in 10 x 16 cell
- 80 x 44 mode - 8 x 7 in 10 x 9 cell
- 132 x 26 mode – 5 x 14 in 6 x 16 cell
- 132 x 44 mode – 5 x 7 in 6 x 9 cell

Double-high and/or double-wide available

National Character Sets

Denmark
France
Germany
Italy
Norway
Spain
Sweden
United Kingdom/United States

Video Attributes

Blank, Flash, Half-intensity, Reverse Video, Underline; Strike-through; combinations of these

Cursor

Blinking block
Block
Blinking underline
Underline
Off

Keyboard

Low profile 30mm DIN standard
16 programmable function keys
Audible keyclick (selectable on/off)
Adjustable slope of 7, 11, and 15 degrees
Detached, with coiled cable
Separate editing keys
Separate numeric keypad
Step-sculptured, selectric-type layout

Cursor Control Keys

Arrow keys(up, down, left, right), Backspace, Back Tab, Enter, Home, Linefeed, Tab, Return

Emulations

ADDS	VP-A1, VP-A2
Ampex	230 plus
TeleVideo	950, 955
Wyse	WY-50, WY-50 Plus, WY-60
Lear Siegler	ADM5

Operating Modes

Block (Edit), Conversation, Local

Display Format

80, 132 or proportional 80 column display
24 data lines, 2 lines for User, Status or Label
24, 25, 42, or 43 data lines
Jump Scroll
Smooth Scroll (7 speeds)
96 line display memory standard
Screen flipping
Split-screen scrolling

Primary Port and Printer Port Data Transmission Rates

50, 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2400, 3600, 4800, 7200, 9600, 19,200, 38,400 bits per second.

Interfaces

Primary Port (DTE only)
- RS423 serial port
- RS422 port

Secondary Port (DTE, DCE, or printer)
- RS423 serial port (bi-directional)
- Parallel port

APPENDIX B
INSTALLING OPTIONS

This section explains how to install the keycaps of the national character sets. The layout for each national character set is shown on the following pages.

Removing Keycaps

When installing one of the optional national character sets, remove and replace keycaps properly, using the keycap remover provided by Ampex (Part No. 3512769–01) or use an equivalent device (Figure B-1). For proper removal of keycaps, follow this procedure:

1. Turn the power "off" and disconnect the keyboard from the terminal.

2. Using the Keycap Remover (Figure B-2), gently place the tongs under the keycap.

3. Twist the Keycap Remover forty-five degrees to the right so that the handle is pointing diagonally.

4. Carefully lift up on the keycap until it snaps out of place.

5. Remove the keycap from the Keycap Remover

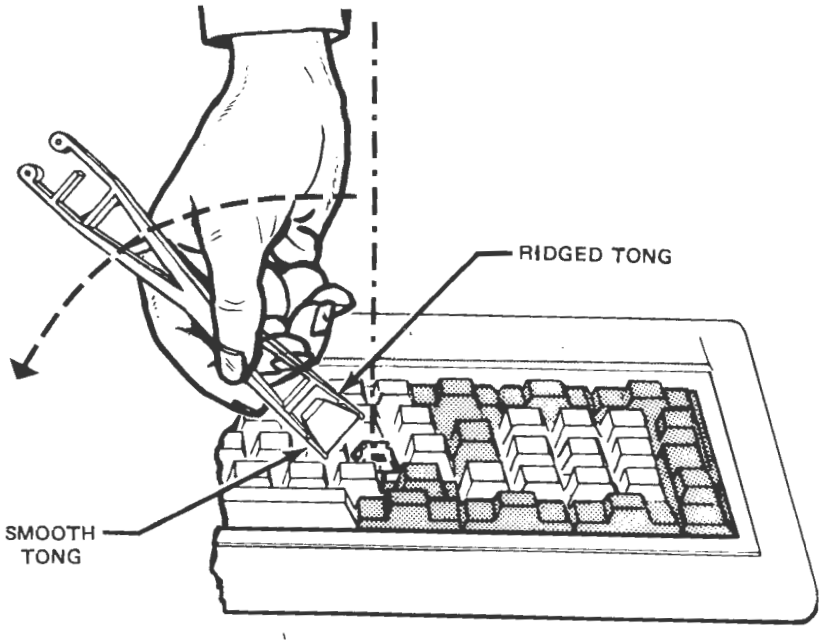
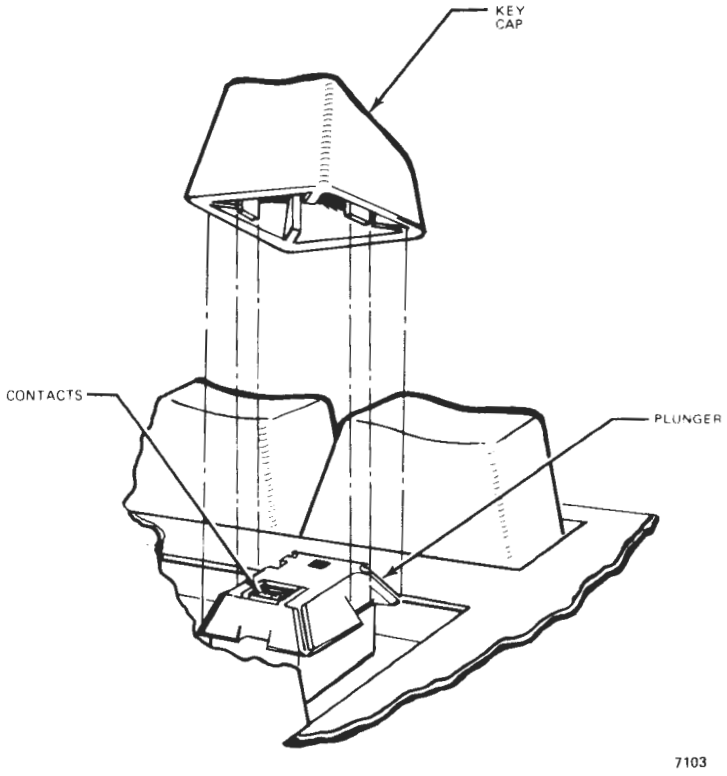


Figure B-1. Keycap Remover

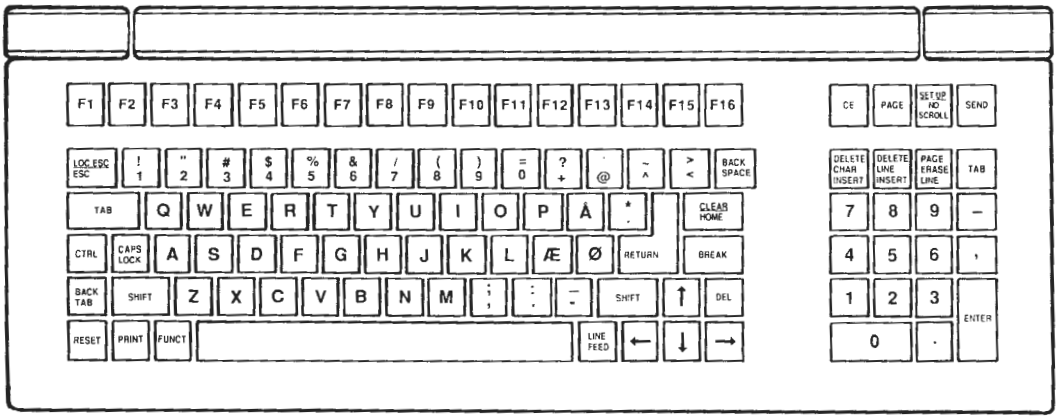
B.2 Replacing Keycaps

Position the replacement keycap over the correct key location. After doublechecking the keycap to be sure it is properly centered, depress the keycap until it is securely seated on the plunger. Refer to following illustrations for your particular character set to identify the correct location of a replacement.

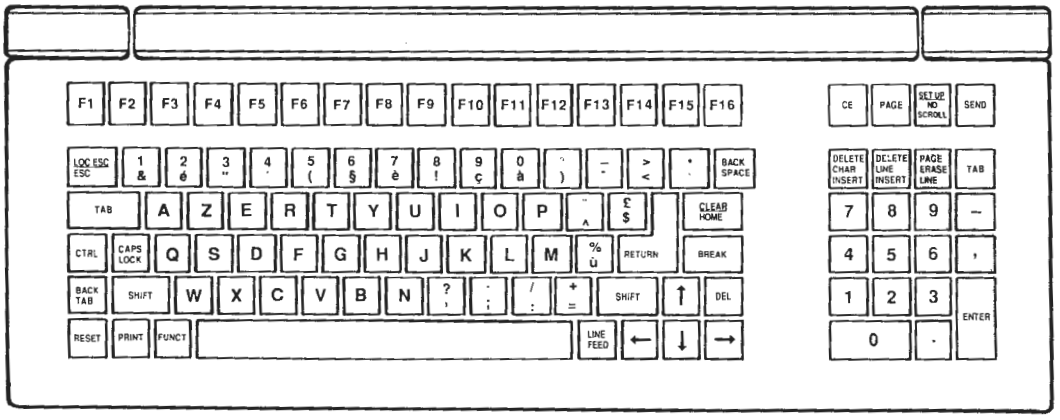


B.2 National Character Sets

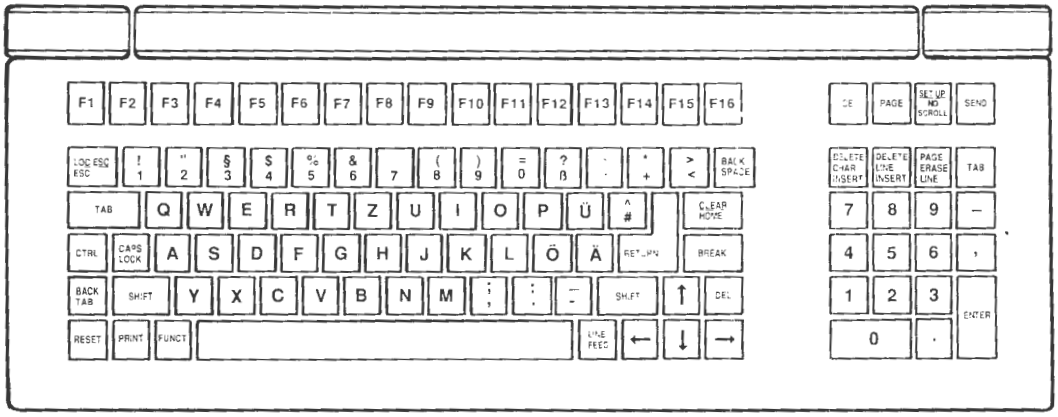
The layout for each national character set is shown on the following pages.


F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 F13 F14 F15 F16
CE PAGE SET UP NO SCROLL SEND
LOC ESC ESC
! 1 " 2 # 3 $ 4 % 5 & 6 / 7 (8) 9 = 0 ? + ´ @ ~ ^ > < BACK SPACE
DELETE CHAR INSERT DELETE LINE INSERT PAGE ERASE LINE TAB
TAB Q W E R T Y U I O P Å * ' CLEAR HOME
7 8 9 –
CTRL CAPS LOCK A S D F G H J K L Æ Ø RETURN BREAK
4 5 6 ,
BACK TAB SHIFT Z X C V B N M ; , : . _ - SHIFT ↑ DEL
1 2 3 ENTER
RESET PRINT FUNCT LINE FEED ← ↓ →
0 .
7213–DAN

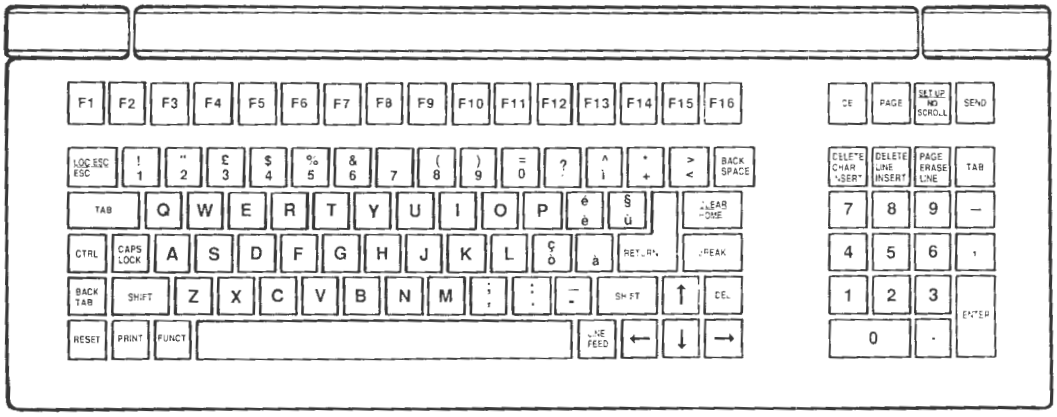
Danish


F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 F13 F14 F15 F16
CE PAGE SET UP NO SCROLL SEND
LOC ESC ESC
1 & 2 é 3 " 4 ' 5 (6 § 7 è 8 ! 9 ç 0 à) - _ > < . BACK SPACE
DELETE CHAR INSERT DELETE LINE INSERT PAGE ERASE LINE TAB
TAB A Z E R T Y U I O P ¨ ^ £ $ CLEAR HOME
7 8 9 –
CTRL CAPS LOCK Q S D F G H J K L M % ù RETURN BREAK
4 5 6 ,
BACK TAB SHIFT W X C V B N ? , ; / : + = SHIFT ↑ DEL
1 2 3 ENTER
RESET PRINT FUNCT LINE FEED ← ↓ →
0 .
7213–FRE

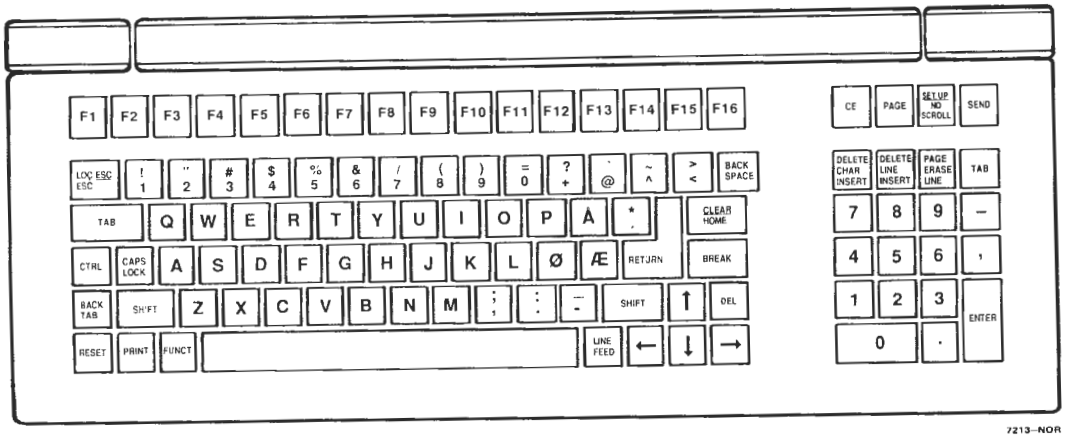
French



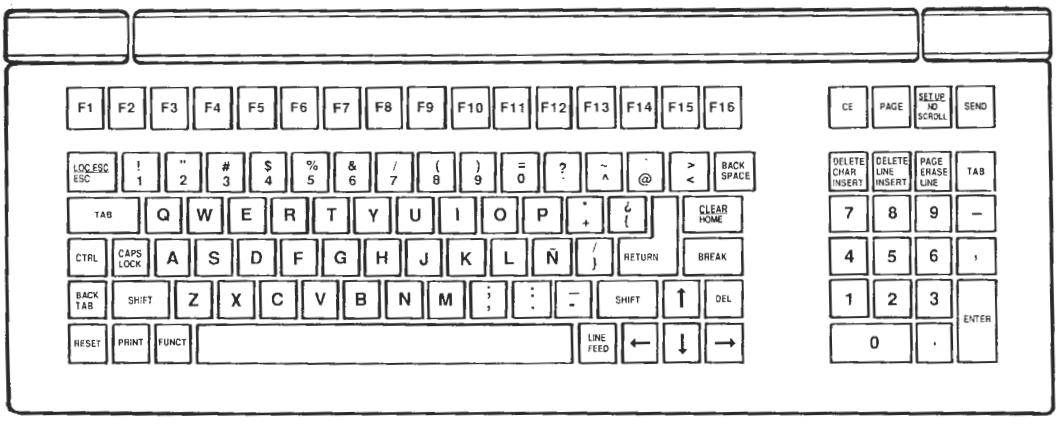
German



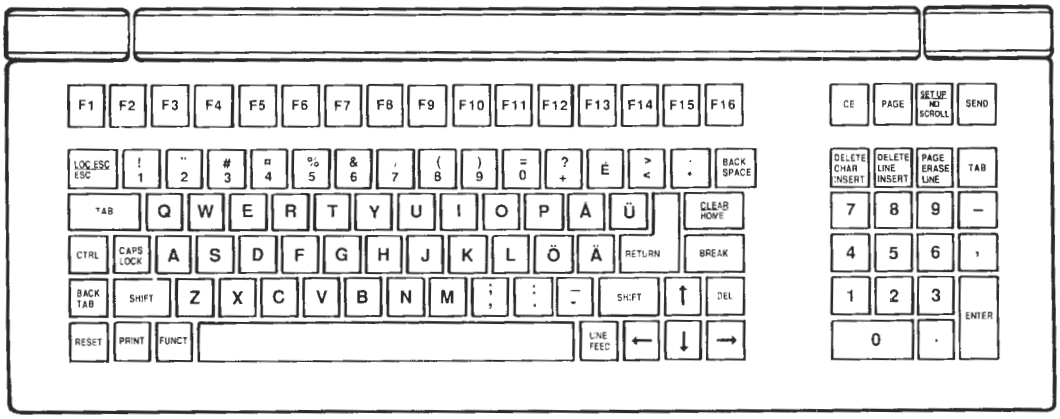
Italian



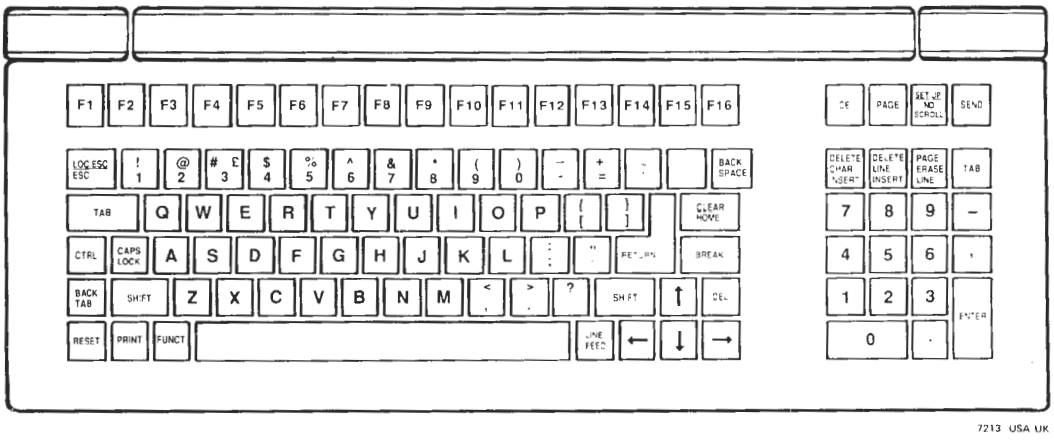
Norwegian



Spanish



Swedish



American English
British English

APPENDIX C
ESCAPE AND CONTROL SEQUENCES FOR AMPEX 270 NATIVE MODE

The following pages list the escape codes and control sequences for Ampex 270 native mode.

Appendix C

Cursor Control

Back Tab	ESC I
Home	CTRL/^
Cursor Down	CTRL/V
Line Feed	CTRL/J
Cursor Left	CTRL/H
Cursor Right	CTRL/L
Cursor Up (No Scroll)	CTRL/K
Reverse Line Feed	ESC j
Carriage Return	CTRL/M
Newline	CTRL/_
Tab	CTRL/I
Field Tab	ESC i
Address Cursor (r,c)	ESC =
Read Cursor (r,c)	ESC ?
Address Cursor (p,r,c)	ESC -
Read Cursor (p,r,c)	ESC /
Address Cursor (rrRccC)	ESC . 9
Write at Hidden Cursor	ESC . D
To Previous Page	ESC J
To Next Page	ESC K
Select Host Partition	ESC V C
Select Host Page	ESC V D
Select Active Partition	ESC V E
Select Active Page	ESC V F
Jump Partition	ESC V G
Window Position	ESC V H
Roll Window Up	ESC V I
Roll Window Down	ESC V J
Roll Window Right	ESC V K
Roll Window Left	ESC V L

Edit Commands

Clear All To Null	ESC *
Clear Unprot. to Sp.	ESC ;
	ESC +
	CTRL/Z
Clear Unprot. to Null	ESC :
Clear Unprot. to H.I.	ESC ,
Clear Unprot. Field to Sp.	CTRL/X
Load Insert Char.	ESC e
Erase EOL to Space.	ESC T
Erase EOL to Null	ESC t
Erase EOP to Space.	ESC Y
Erase EOP to Null	ESC y
Line Edit Mode	ESC O
Page Edit Mode	ESC N
Insert Mode On	ESC q
Insert Mode Off	ESC r
Character Insert	ESC Q
Character Delete (EOF/EOL)	ESC W
Line Insert	ESC E
Line Delete	ESC R
Set Column Tab	ESC 1
Clear Column Tab	ESC 2
Clear All Tabs	ESC 3
Draw Rectagular to Right of Cur.	ESC ^
Clear Partition	ESC V O
Clear All Partition	ESC V P

Display Control

Normal	ESC G 0
Blank	ESC G 1
Flash	ESC G 2
Blank Flash	ESC G 3
Reverse	ESC G 4
Blank Reverse	ESC G 5
Flash Reverse	ESC G 6
Blank Falsh Reverse	ESC G 7
Underline	ESC G 8
Blank Underline	ESC G 9
Flash Underline	ESC G :
Blank Flash Underline	ESC G ;
Reverse Underline	ESC G <
Blank Reverse Underline	ESC G =
Flash Reverse Underline	ESC G >
Blank Flash Reverse Underline	ESC G ?
Normal H.I.	ESC G p
Blank H.I.	ESC G q
Flash H.I.	ESC G r
Blank Flash H.I.	ESC G s
Reverse H.I.	ESC G t
Blank Reverse H.I.	ESC G u
Flash Reverse H.I.	ESC G v
Blank Flash Reverse H.I.	ESC G w
Underline H.I.	ESC G x
Blank Underline H.I.	ESC G y
Flash Underline H.I.	ESC G z
Blank Flash Underline H.I.	ESC G {
Reverse Underline H.I.	ESC G |
Blank Reverse Underline H.I.	ESC G }
Flash Reverse Underline H.I.	ESC G ~
Blank Flash Reverse Underline H.I.	ESC G DEL
Black On White	ESC b
White On Black	ESC d
Turn On Screen	ESC n
Turn off Screen	ESC o
Embedded Attr. Mode	ESC . 7
Non-embedded Attr. Mode	ESC . 8
Attr. Field Set	ESC . B
Reset Double Wide Char.	ESC p 0
Set Double Wide Char.	ESC p 1
Set Upper Double-High Line	ESC m 1
Set Lower Double-High Line	ESC m 2
Set Upper Dbl-High/Dbl-Wide	ESC m 3
Set Lower Dbl-High/Dbl-Wide	ESC m 4
Reset DH/DW to Normal	ESC m 5
Reset Upper/Lower DH. Line	ESC m 0
Set Strike Through	ESC . O
Reset strike Through	ESC . P
Subscript	ESC . Q
Superscript	ESC . R
Proportional Spacing Mode On	ESC . S
Proportional Spacing Mode Off	ESC . T
Italic Character Mode On	ESC . U
Italic Character Mode Off	ESC . V

Cursor Attribute

Cursor Off	ESC . 0
Flashing Block Cursor	ESC . 1
Steady Block Cursor	ESC . 2
Flashing Underline Cursor	ESC . 3
Steady Underline Cursor	ESC . 4

Mode Control

Block Mode On	ESC B
Conversation. Mode On	ESC C
Full Duplex On	ESC D F
Half Duplex On	ESC D H
Set Local Edit	ESC k
Set Duplex Edit	ESC l
Protect Mode On	ESC &
Protect Mode Off	ESC '
Write Protect On	ESC)
Writ Protect Mode Off	ESC (
Monitor Mode On	ESC U CTRL/1
Monitor Mode Off	ESC X ESC u CTRL/2

Special Functions

Load User Line	ESC f
Display User Line	ESC g
Blank User Line	ESC h

Terminal Control

Smooth Scroll On	ESC 8
Jump Scroll On	ESC 9
Flip On	ESC v
Flip Off	ESC w
Set 24 line/page	ESC\1
Set 48 line/page	ESC\2
Set 96 line/page	ESC\3
80 Column Mode	ESC . 5
132 column Mode	ESC . 6
Set 24 Data Line Per Screen	ESC . E
Set 25 Data Line Per Screen	ESC . F
Set 42 Data Line Per Screen	ESC . G
Set 43 Data Line Per Screen	ESC . H
Set Split Screen Horizontally	ESC _
Set Split Screen Vertically	ESC . a
Line Lock	ESC ! 1
Clear All Line Lock	ESC ! 2
Load/Read Time	ESC . C
Create Viewport	ESC V A
Create Partition/Page	ESC V B

Keyboard Control

Lock Keyboard	ESC #
Unlock Keyboard	ESC "
Bell	CTRL/G
Keyclick On	ESC >
Keyclick Off	ESC <

Character Set Control

Graphics Mode On	ESC $
Graphics Mode Off	ESC %
Display Control Character	ESC F
Define and Load a Character	ESC [&

Programming Functions

Program Field Terminator	ESC x 0
Program Line Terminator	ESC x 1
Program Start Prot. Terminator	ESC x 2
Program End Prot. Terminator	ESC x 3
Program Page Terminator	ESC x 4
Program a Function Key	ESC I
Execute Prog. Func. Key	ESC . A
Program Send Key (Uns)	ESC 0 1
Program Send Key (Sh)	ESC 0 2
Program One Edit Key	ESC 0
Program All Edit Keys	ESC]

Transmit to Host

Configure Host Port	ESC {
Enable XON/XOFF	CTRL/O
Disable XON/XOFF	CTRL/N
Send Line Unprotect	ESC 4
Send Page Unprotect	ESC 5
Send Line All	ESC 6
Send Page All	ESC 7
Send Message Unprotect	ESC S
Send Message All	ESC s
Send Status Line	ESC Z 1
Send User Line 1	ESC Z 0
Send User Line 2	ESC Z 2
Send Answerback	ESC M

Transmit to Printer

Configure Aux. Port	ESC }
Local Print	ESC P
Print Unformatted	ESC L
Extension Print On	ESC @
Extension Print Off	ESC A
Tranparent Print On	ESC `
Transparent Print Off	ESC a
Bidirectional Print On	CTRL/R
Bidirectional Print Off	CTRL/T
Print Viewport	ESC V N
Print Screen	ESC V M

APPENDIX D
ESCAPE AND CONTROL SEQUENCES FOR EMULATIONS

The following appendix lists the escape codes and control sequences for all emulations by the Ampex 270. Sequences are grouped by category and by manufacturer.

NOTE: For an emulation, sequences always available are listed in normal type:

ESC B

Sequences available only with the 270 Enhanced Mode are listed in **bold** type:

ESC B

Appendix D

Cursor Control	A270	A230+	TVI955	TVI950	ADM5
Back Tab	ESC I	ESC I	ESC I	ESC I	---
Home	CTRL/^	CTRL/^	CTRL/^	CTRL/^	CTRL/^
Cursor Down	CTRL/V	CTRL/V	CTRL/V	CTRL/V	---
Line Feed	CTRL/J	CTRL/J	CTRL/J	CTRL/J	CTRL/J
Cursor Left	CTRL/H	CTRL/H	CTRL/H	CTRL/H	CTRL/H
	---	---	---	---	---
Cursor Right	CTRL/L	CTRL/L	CTRL/L	CTRL/L	CTRL/L
Cursor Up (No Scroll)	CTRL/K	CTRL/K	CTRL/K	CTRL/K	CTRL/K
Reverse Line Feed	ESC j	ESC j	ESC j	ESC j	---
Carriage Return	CTRL/M	CTRL/M	CTRL/M	CTRL/M	CTRL/M
Newline	CTRL/_	CTRL/_	CTRL/_	CTRL/_	---
Tab	CTRL/I	CTRL/I	CTRL/I	CTRL/I	CTRL/I
Field Tab	ESC i	ESC i	ESC i	ESC i	---
Address Cursor (r,c)	ESC =	ESC =	ESC =	ESC =	ESC =
Read Cursor (r,c)	ESC ?	ESC ?	ESC ?	ESC ?	---
Address Cursor (p,r,c)	ESC -	ESC -	ESC -	ESC -	---
Read Cursor (p,r,c)	ESC /	ESC /	ESC /	ESC /	---
Address Cursor (n,r,c)	---	---	---	---	---
Read Cursor (n,r,c)	---	---	---	---	---
Address Cursor (rrRccC)	ESC . 9	ESC . 9	---	---	---
Read Cursor (rrRccC)	---	---	---	---	---
Write at Hidden Cursor	ESC . D	ESC . D	---	---	---
Active Alternate Segment	---	---	---	---	---
	---	---	---	---	---
Activate Segment 1	---	---	---	---	---
Activate Segment 2	---	---	---	---	---
Home Segment	---	---	---	---	---
Address Cursor (row)	---	---	---	---	---
Address Cursor (col.)	---	---	---	---	---
To Previous Page	ESC J	ESC J	ESC J	ESC J	---
To Next Page	ESC K	ESC K	ESC K	ESC K	---
To Specific Page	---	---	---	---	---
Display Page 1	---	---	---	---	---
Display Page 2	---	---	---	---	---
Select Host Partition	ESC V C	ESC V C	---	---	---
Select Host Page	ESC V D	ESC V D	---	---	---
Select Active Partition	ESC V E	ESC V E	---	---	---
Select Active Page	ESC V F	ESC V F	---	---	---
Jump Partition	ESC V G	ESC V G	---	---	---
Window Position	ESC V H	ESC V H	---	---	---
Roll Window Up	ESC V I	ESC V I	---	---	---
Roll Window Down	ESC V J	ESC V J	---	---	---
Roll Window Right	ESC V K	ESC V K	---	---	---
Roll Window Left	ESC V L	ESC V L	---	---	---

Appendix D

Cursor Control	WY60	WY50+	WY50	VP-A2	VP-A1
Back Tab	ESC I	ESC I	ESC I	ESC I	ESC I
Home	CTRL/^	CTRL/^	CTRL/^	CTRL/A	CTRL/A
Cursor Down	CTRL/V	CTRL/V	CTRL/V	CTRL/V	CTRL/V
Line Feed	CTRL/J	CTRL/J	CTRL/J	CTRL/J	CTRL/J
Cursor Left	CTRL/H	CTRL/H	CTRL/H	CTRL/H	CTRL/H
	---	---	---	CTRL/U	CTRL/U
Cursor Right	CTRL/L	CTRL/L	CTRL/L	CTRL/F	CTRL/F
Cursor Up (No Scroll)	CTRL/K	CTRL/K	CTRL/K	CTRL/Z	CTRL/Z
Reverse Line Feed	ESC j	ESC j	ESC j	ESC j	ESC j
Carriage Return	CTRL/M	CTRL/M	CTRL/M	CTRL/M	CTRL/M
Newline	CTRL/_	CTRL/_	CTRL/_	CTRL/_	CTRL/_
Tab	CTRL/I	CTRL/I	CTRL/I	CTRL/I	CTRL/I
Field Tab	ESC i	ESC i	ESC i	ESC i	ESC i
Address Cursor (r,c)	ESC =	ESC =	ESC =	ESC Y	ESC Y
Read Cursor (r,c)	ESC ?	ESC ?	ESC ?	ESC ?	ESC ?
Address Cursor (p,r,c)	ESC w @	ESC w @	ESC w @	---	---
Read Cursor (p,r,c)	ESC w `	ESC w `	ESC w `	---	---
Address Cursor (n,r,c)	ESC -	ESC -	ESC -	ESC -	ESC -
Read Cursor (n,r,c)	ESC /	ESC /	ESC /	ESC /	ESC /
Address Cursor (rrRccC)	ESC a	ESC a	ESC a	ESC a	ESC a
Read Cursor (rrRccC)	ESC b	ESC b	ESC b	ESC b	ESC b
Write at Hidden Cursor	---	---	---	---	---
Active Alternate Segment	ESC J	ESC J	ESC J	ESC J	ESC J
	ESC K	ESC K	ESC K	---	---
Activate Segment 1	ESC }	ESC }	ESC }	ESC }	ESC }
Activate Segment 2	ESC]	ESC]	ESC]	ESC]	ESC]
Home Segment	ESC {	ESC {	ESC {	ESC {	ESC {
Address Cursor (row)	---	---	---	CTRL/K	CTRL/K
Address Cursor (col.)	ESC _	ESC _	ESC _	CTRL/P	CTRL/P
To Previous Page	ESC w B	ESC w B	ESC w B	---	---
To Next Page	ESC w C	ESC w C	ESC w C	---	---
To Specific Page	ESC w	ESC w	ESC w	---	---
Display Page 1	---	---	---	---	---
Display Page 2	---	---	---	---	---
Select Host Partition	---	---	---	---	---
Select Host Page	---	---	---	---	---
Select Active Partition	---	---	---	---	---
Select Active Page	---	---	---	---	---
Jump Partition	---	---	---	---	---
Window Position	---	---	---	---	---
Roll Window Up	ESC w E	ESC w E	ESC w E	---	---
Roll Window Down	ESC w F	ESC w F	ESC w F	---	---
Roll Window Right	---	---	---	---	---
Roll Window Left	---	---	---	---	---

Edit Commands	A270	A230+	TVI955	TVI950	ADM5
Clear All To Null	ESC*	ESC*	ESC*	ESC*	---
Clear All To Sp.	---	---	---	---	CTRL/Z
	---	---	---	---	---
Clear All To Prot. Sp.	---	---	---	---	---
Clear Unprot. to Sp.	ESC ;	ESC ;	ESC ;	ESC ;	---
	ESC + CTRL/Z	ESC + CTRL/Z	ESC + CTRL/Z	ESC + CTRL/Z	---
Clear Unprot. to Null	ESC :	ESC :	ESC :	ESC :	---
Clear Unprot. to H.I.	ESC ,	ESC ,	ESC ,	ESC ,	---
Clear Unprot. Field to Sp.	CTRL/X	CTRL/X	CTRL/X	CTRL/X	---
Clear Variable Data	---	---	---	---	---
Load Blank Char.	ESC e	ESC e	ESC e	ESC e	---
Erase EOL to Sp.	ESC T	ESC T	ESC T	ESC T	ESC T
Erase EOL to Null	ESC t	ESC t	ESC t	ESC t	---
Erase Unprot. EOL to Null	---	---	---	---	---
Erase Unprot. EOL to Space	---	---	---	---	---
Erase Unpt. EOL Forgnd. to Sp.	---	---	---	---	---
Erase Unpt. EOL Forgnd. to Null	---	---	---	---	---
Erase EOP to Sp.	ESC Y	ESC Y	ESC Y	ESC Y	ESC Y
Erase EOP to Null	ESC y	ESC y	ESC y	ESC y	---
Erase Unprt. EOP Frgnd. to Sp.	---	---	---	---	---
Erase Unprt. EOP Frgnd. to Null	---	---	---	---	---
Line Edit Mode	ESC O	ESC O	ESC O	ESC O	---
Page Edit Mode	ESC N	ESC N	ESC N	ESC N	---
Insert Mode On	ESC q	ESC q	ESC q	ESC q	---
Insert Mode Off	ESC r	ESC r	ESC r	ESC r	---
Character Insert	ESC Q	ESCQ	ESC Q	ESC Q	---
Character Delete (EOF/EOL)	ESC W	ESC W	ESC W	ESC W	---
Line Insert	ESC E	ESC E	ESC E	ESC E	---
Line Delete	ESC R	ESC R	ESC R	ESC R	---
Set Column Tab	ESC 1	ESC 1	ESC 1	ESC 1	---
Clear Column Tab	ESC 2	ESC 2	ESC 2	ESC 2	---
Clear All Tabs	ESC 3	ESC 3	ESC 3	ESC 3	---
Insert Column of Null Char.	---	---	---	---	---
Delete Cursor Column	---	---	---	---	---
Clr Unprot. Col. to Null	---	---	---	---	---
Clr Unprot. Col. to Spec. Char.	---	---	---	---	---
Box Rectangular	---	---	---	---	---
Draw Rectangular to Right of Cur.	ESC ^	ESC ^	ESC H	ESC H	---
Clr Unprot. Rectangular	---	---	---	---	---
Clr Entire Rectangular	---	---	---	---	---
Clear Partition	ESC V O	ESC V O	---	---	---
Clear All Partition	ESC V P	ESC V P	---	---	---

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Edit Commands	WY60	WY50+	WY50	VP-A2	VP-A1
Clear All To Null	ESC*	ESC*	ESC *	ESC*	ESC*
Clear All To Sp.	ESC +	ESC +	ESC +	CTRL/L	CTRL/L
	---	---	---	ESC +	ESC +
Clear All To Prot. Sp.	ESC ,	ESC ,	ESC ,	ESC ,	ESC ,
Clear Unprot. to Sp.	ESC ;	ESC ;	ESC ;	ESC ;	ESC ;
	CTRL/Z	CTRL/Z	CTRL/Z	---	---
Clear Unprot. to Null	ESC :	ESC :	ESC :	ESC :	ESC :
Clear Unprot. to H.I.	---	---	---	---	---
Clear Unprot. Field to Sp.	---	---	---	---	---
Clear Variable Data	---	---	---	---	---
Load Blank Char.	---	---	---	---	---
Erase EOL to Sp.	ESC T	ESC T	ESC T	ESC K	ESC K
Erase EOL to Null	ESC t	ESC t	ESC t	ESC t	ESC t
Erase Unprot. EOL to Null	ESC c L	ESC c L	ESC c L	---	---
Erase Unprot. EOL to Space	ESC c O	ESC c O	ESC c O	---	---
Erase Unpt. EOL Forgnd. to Sp.	ESC c R	ESC c R	ESC c R	---	---
Erase Unpt. EOL Forgnd. to Null	ESC c S	ESC c S	ESC c S	---	---
Erase EOP to Sp.	ESC Y	ESC Y	ESC Y	ESC k	ESC k
Erase EOP to Null	ESC y	ESC y	ESC y	ESC y	ESC y
Erase Unprt. EOP Frgnd. to Sp.	ESC c P	ESC c P	ESC c P	---	---
Erase Unprt. EOP Frgnd. to Null	ESC c Q	ESC c Q	ESC c Q	---	---
Line Edit Mode	ESC e "	ESC e "	ESC e "	---	---
Page Edit Mode	ESC e #	ESC e #	ESC e #	---	---
Insert Mode On	ESC q	ESC q	ESC q	ESC q	ESC q
Insert Mode Off	ESC r	ESC r	ESC r	ESC r	ESC r
Character Insert	ESC Q	ESC Q	ESC Q	ESC Q	ESC Q
Character Delete (EOF/EOL)	ESC W	ESC W	ESC W	ESC W	ESC W
Line Insert	ESC E	ESC E	ESC E	ESC M	ESC M
Line Delete	ESC R	ESC R	ESC R	ESC l	ESC l
Set Column Tab	ESC 1	ESC 1	ESC 1	ESC 1	ESC 1
Clear Column Tab	ESC 2	ESC 2	ESC 2	ESC 2	ESC 2
Clear All Tabs	ESC 0	ESC 0	ESC 0	---	---
Insert Column of Null Char.	ESC c M	ESC c M	ESC c M	---	---
Delete Cursor Column	ESC c J	ESC c J	ESC c J	---	---
Clr Unprot. Col. to Null	ESC c K	ESC c K	ESC c K	---	---
Clr Unprot. Col. to Spec. Char.	ESC c I	ESC c I	ESC c I	---	---
Box Rectangular	ESC c G	ESC c G	ESC c G	---	---
Draw Rectangular to Right of Cur.	ESC c N	ESC c N	ESC c N	---	---
Clr Unprot. Rectangular	ESC c F	ESC c F	ESC c F	---	---
Clr Entire Rectangular	ESC c H	ESC c H	ESC c H	---	---
Clear Partition	---	---	---	---	---
Clear All Partition	---	---	---	---	---

Appendix D

Display Control	A270	A230+	TVI955	TVI950	ADM5
Normal	ESC G 0	ESC G 0	ESC G 0	ESC G 0	---
Blank	ESC G 1	ESC G 1	ESC G 1	ESC G 1	---
Flash	ESC G 2	ESC G 2	ESC G 2	ESC G 2	---
Blank Flash	ESC G 3	ESC G 3	ESC G 3	ESC G 3	---
Reverse	ESC G 4	ESC G 4	ESC G 4	ESC G 4	---
Blank Reverse	ESC G 5	ESC G 5	ESC G 5	ESC G 5	---
Flash Reverse	ESC G 6	ESC G 6	ESC G 6	ESC G 6	---
Blank Flash Reversw	ESC G 7	ESC G 7	ESC G 7	ESC G 7	---
Underline	ESC G 8	ESC G 8	ESC G 8	ESC G 8	---
Blank Underline	ESC G 9	ESC G 9	ESC G 9	ESC G 9	---
Flash Underline	ESC G :	ESC G :	ESC G :	ESC G :	---
Blank Flash Underline	ESC G ;	ESC G ;	ESC G ;	ESC G ;	---
Reverse Underline	ESC G <	ESC G <	ESC G <	ESC G <	---
Blank Reverse Underline	ESC G =	ESC G =	ESC G =	ESC G =	---
Flash Reverse Underline	ESC G >	ESC G >	ESC G >	ESC G >	---
Blank Flash Reverse Underline	ESC G ?	ESC G ?	ESC G ?	ESC G ?	---
Normal H.I.	ESC G p	ESC G p	---	---	---
Blank H.I.	ESC G q	ESC G q	---	---	---
Flash H.I.	ESC G r	ESC G r	---	---	---
Blank Flash H.I.	ESC G s	ESC G s	---	---	---
Reverse H.I.	ESC G t	ESC G t	---	---	---
Blank Reverse H.I.	ESC G u	ESC G u	---	---	---
Flash Reverse H.I.	ESC G v	ESC G v	---	---	---
Blank Flash Reverse H.I.	ESC G w	ESC G w	---	---	---
Underline H.I.	ESC G x	ESC G x	---	---	---
Blank Underline H.I.	ESC G y	ESC G y	---	---	---
Flash Underline H.I.	ESC G z	ESC G z	---	---	---
Blank Flash Underline H.I.	ESC G {	ESC G {	---	---	---
Reverse Underline H.I.	ESC G |	ESC G |	---	---	---
Blank Reverse Underline H.I.	ESC G }	ESC G }	---	---	---
Flash Reverse Underline H.I.	ESC G ~	ESC G ~	---	---	---
Blank Flash Reverse Underline H.I.	ESC G DEL	ESC G DEL	---	---	---
Black On White	ESC b	ESC b	ESC b	ESC b	---
White On Black	ESC d	ESC d	ESC d	ESC d	---
Turn On Screen	ESC n	ESC n	ESC n	ESC n	---
Turn off Screen	ESC o	ESC o	ESC o	ESC o	---
Reverse Video On/Off	---	---	---	---	ESC G
Half Intensity On	---	---	---	---	ESC)
Half Intensity Off	---	---	---	---	ESC (
Set Field Attribute	---	ESC . B	---	---	---
Write Unprot. with Attr.	---	---	---	---	---
Write Unprot. with Code	---	---	---	---	---
Set a Prot. Column	---	---	---	---	---
Set Prot. Char. Attr.	---	---	---	---	---
Set Line Attr.	---	---	---	---	---
Char. Attr. Mode Off	---	---	---	---	---
Char. Attr. Mode On	---	---	---	---	---
Page Attr. Mode On	---	---	---	---	---
Line Attr. Mode On	---	---	---	---	---
Tagged Attr. Mode	---	---	---	---	---
Embedded Attr. Mode	ESC . 7	ESC . 7	---	---	---
Non-embedded Attr. Mode	ESC . 8	ESC . 8	---	---	---
Attribute Space	---	---	ESC F 0	ESC F 0	---
Attribute Non-space	---	---	ESC F 1	ESC F 1	---
Tag Bit Set	---	---	---	---	---
Tag Bit Reset	---	---	---	---	---
Attr. Field Set	ESC . B	ESC . B	---	---	---
Reset Double Wide Char.	ESC p 0	ESC p 0	---	---	---
Set Double Wide Char.	ESC p 1	ESC p 1	---	---	---
Set Upper Double-High Line	ESC m 1	ESC m 1	---	---	---

Appendix D

Display Control	WY60	WY50+	WY50	VP-A2	VP-A1
Normal	ESC G 0	ESC G 0	ESC G 0	ESC G 0	ESC G 0
Blank	ESC G 1	ESC G 1	ESC G 1	ESC G 1	ESC G 1
Flash	ESC G 2	ESC G 2	ESC G 2	ESC G 2	ESC G 2
Blank Flash	ESC G 3	ESC G 3	ESC G 3	ESC G 3	ESC G 3
Reverse	ESC G 4	ESC G 4	ESC G 4	ESC G 4	ESC G 4
Blank Reverse	ESC G 5	ESC G 5	ESC G 5	ESC G 5	ESC G 5
Flash Reverse	ESC G 6	ESC G 6	ESC G 6	ESC G 6	ESC G 6
Blank Flash Reversw	ESC G 7	ESC G 7	ESC G 7	ESC G 7	ESC G 7
Underline	ESC G 8	ESC G 8	ESC G 8	ESC G 8	ESC G 8
Blank Underline	ESC G 9	ESC G 9	ESC G 9	ESC G 9	ESC G 9
Flash Underline	ESC G :	ESC G :	ESC G :	ESC G :	ESC G :
Blank Flash Underline	ESC G ;	ESC G ;	ESC G ;	ESC G ;	ESC G ;
Reverse Underline	ESC G <	ESC G <	ESC G <	ESC G <	ESC G <
Blank Reverse Underline	ESC G =	ESC G =	ESC G =	ESC G =	ESC G =
Flash Reverse Underline	ESC G >	ESC G >	ESC G >	ESC G >	ESC G >
fBlank Flash Reverse Underline	ESC G ?	ESC G ?	ESC G ?	ESC G ?	ESC G ?
Normal H.I.	ESC G p	ESC G p	ESC G p	ESC G p	ESC G p
Blank H.I.	ESC G q	ESC G q	ESC G q	ESC G q	ESC G q
Flash H.I.	ESC G r	ESC G r	ESC G r	ESC G r	ESC G r
Blank Flash H.I.	ESC G s	ESC G s	ESC G s	ESC G s	ESC G s
Reverse H.I.	ESC G t	ESC G t	ESC G t	ESC G t	ESC G t
Blank Reverse H.I.	ESC G u	ESC G u	ESC G u	ESC G u	ESC G u
Flash Reverse H.I.	ESC G v	ESC G v	ESC G v	ESC G v	ESC G v
Blank Flash Reverse H.I.	ESC G w	ESC G w	ESC G w	ESC G w	ESC G w
Underline H.I.	ESC G x	ESC G x	ESC G x	ESC G x	ESC G x
Blank Underline H.I.	ESC G y	ESC G y	ESC G y	ESC G y	ESC G y
Flash Underline H.I.	ESC G z	ESC G z	ESC G z	ESC G z	ESC G z
Blank Flash Underline H.I.	ESC G {	ESC G {	ESC G {	ESC G {	ESC G {
Reverse Underline H.I.	ESC G |	ESC G |	ESC G |	ESC G |	ESC G |
Blank Reverse Underline H.I.	ESC G }	ESC G }	ESC G }	ESC G }	ESC G }
Flash Reverse Underline H.I.	ESC G ~	ESC G ~	ESC G ~	ESC G ~	ESC G ~
Blank Flash Reverse Underline H.I.	ESC G DEL	ESC G DEL	ESC G DEL	ESC G DEL	ESC G DEL
Black On White	ESC ^ 0	ESC ^ 0	ESC ^ 0	---	---
White On Black	ESC ^ 1	ESC ^ 1	ESC ^ 1	---	---
Turn On Screen	ESC ` 9	ESC ` 9	ESC ` 9	---	---
Turn off Screen	ESC ` 8	ESC ` 8	ESC ` 8	---	---
Reverse Video On/Off	---	---	---	---	---
Half Intensity On	---	---	---	---	---
Half Intensity Off	---	---	---	---	---
Set Field Attribute	ESC A	ESC A	ESC A	ESC A	ESC A
Write Unprot. with Attr.	ESC !	ESC !	ESC !	ESC !	ESC !
Write Unprot. with Code	ESC .	ESC .	ESC .	ESC .	ESC .
Set a Prot. Column	ESC V	ESC V	ESC V	ESC V	ESC V
Set Prot. Char. Attr.	ESC `	ESC `	ESC `	ESC `	ESC `
Set Line Attr.	ESC G	ESC G	ESC G	---	---
Char. Attr. Mode Off	ESC e 0	ESC e 0	ESC e 0	---	---
Char. Attr. Mode On	ESC e 1	ESC e 1	ESC e 1	---	---
Page Attr. Mode On	ESC e 2	ESC e 2	ESC e 2	---	---
Line Attr. Mode On	ESC e 3	ESC e 3	ESC e 3	---	---
Tagged Attr. Mode	---	---	---	---	---
Embedded Attr. Mode	---	---	---	---	---
Non-embedded Attr. Mode	---	---	---	---	---
Attribute Space	---	---	---	---	---
Attribute Non-space	---	---	---	---	---
Tag Bit Set	---	---	---	CTRL/N	CTRL/N
Tag Bit Reset	---	---	---	CTRL/O	CTRL/O
Attr. Field Set	---	---	---	---	---
Reset Double Wide Char.	---	---	---	---	---
Set Double Wide Char.	---	---	ESC G A	---	---
Set Upper Double-High Line	---	ESC G B	---	---	---

Display Control (Continued)	A270	A230+	TVI955	TVI950	ADM5
Set Lower Double-High Line	ESC m 2	ESC m 2	---	---	---
Upper Dbl-High/Dbl-Wide	ESC m 3	ESC m 3	---	---	---
Lower Dbl-High/Dbl-Wide	ESC m 4	ESC m 4	---	---	---
Reset DH/DW to Normal	ESC m 5	ESC m 5	---	---	---
Reset Upper/Lower DH. Line	ESC m 0	ESC m 0	---	---	---
Set Strike Through	ESC . O	ESC . O	---	---	---
Reset Strike Through	ESC . P	ESC . P	---	---	---
Subscript	ESC . Q	ESC . Q	---	---	---
Superscript	ESC . R	ESC . R	---	---	---
Proportional Spacing Mode On	ESC . S	ESC . S	---	---	---
Proportional Spacing Mode Off	ESC . T	ESC . T	---	---	---
Italic Character Mode On	ESC . U	ESC . U	---	---	---
Italic Character Mode Off	ESC . V	ESC . V	---	---	---
Cursor Attribute					
Flashing Block Cursor	ESC . 1	ESC . 1	ESC .1	ESC .1	—
Steady Block Cursor	ESC . 2	ESC . 2	ESC .2	ESC .2	—
Flashing Underline Cursor	ESC . 3	ESC . 3	ESC .3	ESC .3	—
Steady Underline Cursor	ESC . 4	ESC . 4	ESC .4	ESC .4	—
Cursor ON	---	---	---	---	---
Cursor Off	ESC . 0	ESC . 0	ESC .0	ESC .0	---
Mode Control					
Block Mode On	ESC B	ESC B	ESC B	ESC B	---
Convs. Mode On	ESC C	ESC C	ESC C	ESC C	---
Full Duplex On	ESC D F	ESC D F	ESC D F	ESC D F	---
Half Duplex On	ESC D H	ESC D H	ESC D H	ESC D H	---
Local Mode On	---	---	ESC c	ESC c	---
Set Local Edit	ESC k	ESC k	ESC k	ESC k	---
Set Duplex Edit	ESC l	ESC l	ESC l	ESC l	---
Protect Mode On	ESC &	ESC &	ESC &	ESC &	---
Protect Mode Off	ESC '	ESC '	ESC '	ESC '	---
Write Protect On	ESC)	ESC)	ESC)	ESC)	---
Writ Protect Mode Off	ESC (	ESC (	ESC (	ESC (	---
Monitor Mode On	ESC U CTRL/1	ESC U CTRL/1	ESC U CTRL/1	ESC U CTRL/1	--- CTRL/1
Monitor Mode Off	ESC X ESC u CTRL/2	ESC X ESC u CTRL/2	ESC X ESC u CTRL/2	ESC X ESC u CTRL/2	--- --- CTRL/2
Select Emulation	---	---	---	---	---
Enhance Mode On	---	---	---	---	---
Enhance Mode Off	---	---	---	---	---
ACK Mode Off	---	---	---	---	---
ACK Mode On	---	---	---	---	---

Display Control (Continued)	WY60	WY50+	WY50	VP-A2	VP-A1
Set Lower Double-High Line	ESC G C	---	---	---	---
Upper Dbl-High/Dbl-Wide	ESC G D	ESC G D	ESC G D	---	---
Lower Dbl-High/Dbl-Wide	ESC G E	ESC G E	ESC G E	---	---
Reset DH/DW to Normal	ESC G @	ESC G @	ESC G @	---	---
Reset Upper/Lower DH. Line	---	---	---	---	---
Set Strike Through	---	---	---	---	---
Reset Strike Through	---	---	---	---	---
Subscript	---	---	---	---	---
Superscript	---	---	---	---	---
Proportional Spacing Mode On	---	---	---	---	---
Proportional Spacing Mode Off	---	---	---	---	---
Italic Character Mode On	---	---	---	---	---
Italic Character Mode Off	---	---	---	---	---
Cursor Attribute					
Flashing Block Cursor	ESC ` 5	---	---	---	---
Steady Block Cursor	ESC ` 2	---	---	---	---
Flashing Underline Cursor	ESC ` 3	---	---	---	---
Steady Underline Cursor	ESC ` 4	---	---	---	---
Cursor On	ESC ` 1	ESC ` 1	ESC ` 1	CTRL/X	CTRL/X
Cursor Off	ESC ` 0	ESC ` 0	ESC ` 0	CTRL/W	CTRL/W
Mode Control					
Block Mode On	ESC B	ESC B	ESC B	ESC B	ESC B
Convs. Mode On	ESC C	ESC C	ESC C	ESC C	ESC C
Full Duplex On	ESC D F	ESC D F	ESC D F	ESC D F	ESC D F
Half Duplex On	ESC D H	ESC D H	ESC D H	ESC D H	ESC D H
Local Mode On	---	---	---	---	---
Set Local Edit	ESC k	ESC k	ESC k	---	---
Set Duplex Edit	ESC l	ESC l	ESC l	---	---
Protect Mode On	ESC &	ESC &	ESC &	ESC &	ESC &
Protect Mode Off	ESC '	ESC '	ESC '	ESC '	ESC '
Write Protect On	ESC)	ESC)	ESC)	ESC)	ESC)
Writ Protect Mode Off	ESC (	ESC (	ESC (	ESC (	ESC (
Monitor Mode On	ESC U CTRL/1	ESC U CTRL/1	ESC U CTRL/1	ESC U CTRL/1	ESC U CTRL/1
Monitor Mode Off	ESC X ESC u CTRL/2	ESC X ESC u CTRL/2	ESC X ESC u CTRL/2	ESC X -ESC u CTRL/2	ESC X ESC u CTRL/2
Select Emulation	ESC ~	ESC ~	ESC ~	---	---
Enhance Mode On	ESC ~ !	ESc ~ !	ESc ~ !	---	---
Enhance Mode Off	ESC ~ sp	ESC ~ sp	ESC ~ sp	---	---
ACK Mode Off	ESC e 6	ESC e 6	ESC e 6	--	---
ACK Mode On	ESC e 7	ESC e 7	ESC e 7	---	---

Special Functions	A270	A230+	TVI955	TVI950	ADM5
Load User Line	ESC f	ESC f	ESC f	ESC f	---
Load Text into a User Message	---	---	ESC _	ESC _	---
Display User Line	ESC g	ESC g	ESC g	ESC g	---
Blank User Line	ESC h	ESC h	ESC h	ESC h	---
Disable Status/User Line	---	---	---	---	---
Enable Status/User Line	---	---	---	---	---
Enter Host Message Line	---	---	---	---	---
Turn On Extended Status Line	---	---	---	---	---
Turn On Standard Status Line	---	---	---	---	---
Turn Off Status Line Display	---	---	---	---	---
Reset Term. to Default	---	---	ESC ~ 0	ESC ~ 0	---
Reset Term. to NVM	---	---	ESC ~ 1	ESC ~ 1	---
Reset Function Keys to Default	---	---	ESC ~ 2	ESC ~ 2	---
Reset Edit Keys to Default	---	---	ESC ~ 3	ESC ~ 3	---
Command Sequence Introducer	---	---	ESC [	ESC [	---
Terminal Control					
Screen Saver On	---	---	---	---	---
Screen Saver Off	---	---	---	---	---
Smooth Scroll On	ESC 8	ESC 8	ESC 8	ESC 8	---
Jump Scroll On	ESC 9	ESC 9	ESC 9	ESC 9	---
Smooth Scroll 1 r/s	---	---	---	---	---
Smooth Scroll 2 r/s	---	---	---	---	---
Smooth Scroll 4 r/s	---	---	---	---	---
Smooth Scroll 8 r/s	---	---	---	---	---
Disable Scroll	---	---	---	---	---
Enable Scroll	---	---	---	---	---
Auto Wrap On	---	---	---	---	---
Auto Wrap Off	---	---	---	---	---
Receive CR Mode On	---	---	---	---	---
Receive CR Mode Off	---	---	---	---	---
Flip On	ESC v	ESC v	ESC v	ESC v	---
Flip Off	ESC w	ESC w	ESC w	ESC w	---
Set Line per Page	ESC \	ESC \	ESC \	ESC \	---
80 Column Mode	ESC . 5	ESC . 5	ESC . 5	ESC . 5	---
132 column Mode	ESC . 6	ESC . 6	ESC . 6	ESC . 6	---
Economy 80 Col. Mode On	---	---	---	---	---
Economy 80 Col. Mode Off	---	---	---	---	---
Set 24 Data Line Per Screen	ESC . E	ESC . E	---	---	---
Set 25 Data Line Per Screen	ESC . F	ESC . F	---	---	---
Set 42 Data Line Per Screen	ESC . G	ESC . G	---	---	---
Set 43 Data Line Per Screen	ESC . H	ESC . H	---	---	---
Set Split Screen Horizontally	ESC _	ESC _	---	---	---
Set Split Screen Vertically	ESC . a	ESC . a	---	---	---
Set Split Screen (clr. Screen) -- workspaces in 2 pages	---	---	---	---	---
Set Split Screen -- workspaces in 2 pages	---	---	---	---	---
Set Split Screen (clr. Pages) -- workspaces in multi. pages	---	---	---	---	---
Set Split Screen -- workspaces in multi. pages	---	---	---	---	---
Reset Split Screen (clr. pages)	---	---	---	---	---
Reset Split Screen	---	---	---	---	---
Lower Horizontal Split	---	---	---	---	---
Raise Horizontal Split	---	---	---	---	---

Appendix D

Special Functions	WY60	WY50+	WY50	VP-A2	VP-A1
Load User Line	---	---	---	---	---
Load Text into a User Message	---	---	---	---	---
Display User Line	---	---	---	---	---
Blank User Line	---	---	---	---	---
Disable Status/User Line	---	---	---	---	---
Enable Status/User Line	---	---	---	---	---
Enter Host Message Line	ESC F	ESC F	ESC F	ESC F	ESC F
Turn On Extended Status Line	ESC ` a	ESC ` a	ESC ` a	---	---
Turn On Standard Status Line	ESC ` b	ESC ` b	ESC ` b	---	---
Turn Off Status Line Display	ESC ` c	ESC ` c	ESC ` c	---	---
Reset Term. to Default	---	---	---	---	---
Reset Term. to NVM	---	---	---	---	---
Reset Function Keys to Default	---	---	---	---	---
Reset Edit Keys to Default	---	---	---	---	---
Command Sequence Introducer	---	---	---	---	---
Terminal Control					
Screen Saver On	ESC e P	ESC e P	ESC e P	---	---
Screen Saver Off	ESC e Q	ESC e Q	ESC e Q	---	---
Smooth Scroll On	---	---	---	---	---
Jump Scroll On	ESC ` @	ESC ` @	ESC ` @	ESC ` @	ESC ` @
Smooth Scroll 1 r/s	ESC ` <	ESC ` <	ESC ` <	ESC ` <	ESC ` <
Smooth Scroll 2 r/s	ESC ` =	ESC ` =	ESC ` =	ESC ` =	ESC ` =
Smooth Scroll 4 r/s	ESC ` >	ESC ` >	ESC ` >	ESC ` >	ESC ` >
Smooth Scroll 8 r/s	ESC ` ?	ESC ` ?	ESC ` ?	ESC ` ?	ESC ` ?
Disable Scroll	ESC N	ESC N	ESC N	ESC N	ESC N
Enable Scroll	ESC O	ESC O	ESC O	ESC O	ESC O
Auto Wrap On	ESC d /	ESC d /	ESC d /	---	---
Auto Wrap Off	ESC d .	ESC d .	ESC d .	---	---
Receive CR Mode On	ESC e 5	ESC e 5	ESC e 5	---	---
Receive CR Mode Off	ESC e 4	ESC e 4	ESC e 4	---	---
Flip On	ESC d +	ESC d +	ESC d +	---	---
Flip Off	ESC d *	ESC d *	ESC d *	---	---
Set Line per Page	ESC w	ESC w	ESC w	---	---
80 Column Mode	ESC ` :	ESC ` :	ESC ` :	ESC ` :	ESC ` :
132 column Mode	ESC ` ;	ESC ` ;	ESC ` ;	ESC ` ;	ESC ` ;
Economy 80 Col. Mode On	ESC e G	ESC e G	ESC e G	--	---
Economy 80 Col. Mode Off	ESC e F	ESC e F	ESC e F	---	---
Set 24 Data Line Per Screen	ESC e (	ESC e (	ESC e (	–	---
Set 25 Data Line Per Screen	ESC e)	ESC e)	ESC e)	–	---
Set 42 Data Line Per Screen	ESC e*	ESC e*	ESC e*	---	---
Set 43 Data Line Per Screen	ESC e +	ESC e +	ESC e +	---	---
Set Split Screen Horizontally	---	---	---	---	---
Set Split Screen Vertically	---	---	---	---	---
Set Split Screen (clr. Screen) -- workspaces in 2 pages	ESC x 1	ESC x 1	ESC x 1	ESC x 1	ESC x 1
Set Split Screen -- workspaces in 2 pages	ESC x A	ESC x A	ESC x A	---	---
Set Split Screen (clr. Pages) -- workspaces in multi. pages	ESC x 3	ESC x 3	ESC x 3	---	---
Set Split Screen -- workspaces in multi. pages	ESC x C	ESC x C	ESC x C	---	---
Reset Split Screen (clr. pages)	ESC x 0	ESC x 0	ESC x 0	ESC x 0	ESC x 0
Reset Split Screen	ESC x @	ESC x @	ESC x @	---	---
Lower Horizontal Split	ESC x P	ESC x P	ESC x P	---	---
Raise Horizontal Split	ESC x R	ESC x R	ESC x R	---	---

Terminal Control (Continued)	A270	A230+	TVI955	TVI950	ADM5
Line Lock	ESC ! 1	ESC ! 1	ESC ! 1	ESC ! 1	---
Clear All Line Lock	ESC ! 2	ESC ! 2	ESC ! 2	ESC ! 2	---
Start Self Test	---	---	ESC V	ESC V	---
Load Time of Date	---	---	---	---	---
Load/Read Time	ESC . C	ESC . C	---	---	---
Create Viewport	ESC V A	ESC V A	---	---	---
Create Partition/Page	ESC V B	ESC V B	---	---	---
Keyboard Control					
Lock Keyboard	ESC #	ESC #	ESC #	ESC #	CTRL/O(KBD)
	---	---	---	---	---
Unlock Keyboard	ESC "	ESC "	ESC "	ESC "	CTRL/N(KBD)
	---	---	---	---	---
Bell	CTRL/G	CTRL/G	CTRL/G	CTRL/G	CTRL/G
Margin Bell On	---	---	---	---	---
Margin Bell Off	---	---	---	---	---
Keyclick On	ESC >	ESC >	ESC >	ESC >	---
Keyclick Off	ESC <	ESC <	ESC <	ESC <	---
CAPS Lock On	---	---	---	---	---
CAPS Lock Off	---	---	---	---	---
Key Repeat On	---	---	---	---	---
Key Repeat Off	---	---	---	---	---
Def. CAPS LOCK as CAPS LOCK	---	---	---	---	---
Def CAPS LOCK as REV	---	---	---	---	---
Wyseword Mode On	---	---	---	---	---
Wyseword Mode Off	---	---	---	---	---
Application Key Mode on	---	---	---	---	---
Application Key Mode Off	---	---	---	---	---
Set Max. Func. Key TX. Speed	---	---	---	---	---
Load the Margin Bell Col.	---	---	CTRL/W	CTRL/W	---
Character Set Control					
Graphics Mode On	ESC $	ESC $	ESC $	ESC $	---
Graphics Mode Off	ESC %	ESC %	ESC %	ESC %	---
Display Control Character	ESC F	ESC F	---	---	---
Display STX Character	---	---	---	---	---
Display ETX Character	---	---	---	---	---
Display One Graphic Character	---	---	---	---	---
Select a Char. from the Multinational Char. Set	---	---	CTRL/U	CTRL/U	---
Select Primary Char. Set	---	---	---	---	---
Select Secondary Char. Set	---	---	---	---	---
Define Primary Character Set	---	---	---	---	---
Define Secondary Character Set	---	---	---	---	---
Turn Automatic Font Loading Off	---	---	---	---	---
Turn Automatic Font Loading On	---	---	---	---	---
Load Font Bank with Predefined Char. Set	---	---	---	---	---
Clear Font Bank	---	---	---	---	---
Define and Load a Character	ESC [&	ESC [&	---	---	---

Terminal Control (Continued)	WY60	WY50+	WY50	VP-A2	VP-A1
Line Lock	ESC ` H	ESC ` H	ESC ` H	---	---
Clear All Line Lock	ESC ` I	ESC ` I	ESC ` I	---	---
Start Self Test	---	---	---	---	---
Load Time of Date	ESC c 8	ESC c 8	ESC c 8	---	---
Load/Read Time	---	---	---	---	---
Create Viewport	---	---	---	---	---
Create Partition/Page	---	---	---	---	---
Keyboard Control					
Lock Keyboard	ESC # CTRL/O	ESC # CTRL/O	ESC # CTRL/O	ESC 5 CTRL/D	ESC 5 CTRL/D
Unlock Keyboard	ESC " CTRL/N	ESC " CTRL/N	ESC " CTRL/N	ESC 6 CTRL/B	ESC 6 CTRL/B
Bell	CTRL/G	CTRL/G	CTRL/G	CTRL/G	CTRL/G
Margin Bell On	ESC e L	ESC e L	ESC e L	---	---
Margin Bell Off	ESC e M	ESC e M	ESC e M	--	---
Keyclick On	ESC e %	ESC e %	ESC e %	-ESC >	ESC >
Keyclick Off	ESC e $	ESC e $	ESC e $	ESC <	ESC <
CAPS Lock On	ESC e '	ESC e '	ESC e '	---	---
CAPS Lock Off	ESC e &	ESC e &	ESC e &	---	---
Key Repeat On	ESC e -	ESC e -	ESC e -	---	---
Key Repeat Off	ESC e ,	ESC e ,	ESC e ,	---	---
Def. CAPS LOCK as CAPS LOCK	ESC e V	ESC e V	ESC e V	---	---
Def CAPS LOCK as REV	ESC e U	ESC e U	ESC e U	---	---
Wyseword Mode On	ESC ~ /	ESC ~ /	ESC ~ /	---	---
Wyseword Mode Off	ESC ~ .	ESC ~ .	ESC ~ .	---	---
Application Key Mode on	ESC ~ 3	ESC ~ 3	ESC ~ 3	---	---
Application Key Mode Off	ESC ~ 2	ESC ~ 2	ESC ~ 2	---	---
Set Max. Func. Key TX. Speed	ESC c 7	ESC c 7	ESC c 7	---	---
Load the Margin Bell Col.	---	---	---	--	---
Character Set Control					
Graphics Mode On	ESC H STX	ESC H STX	ESC H STX	ESC H STX	ESC H STX
Graphics Mode Off	ESC H ETX	ESC H ETX	ESC H ETX	ESC H ETX	ESC H ETX
Display Control Character	---	---	---	---	---
Display STX Character	ESC 8	ESC 8	ESC 8	ESC 8	ESC 8
Display ETX Character	ESC 9	ESC 9	ESC 9	ESC 9	ESC 9
Display One Graphic Character	ESC H	ESC H	ESC H	---	---
Select a Char. from the Multinational Char. Set	---	---	---	---	---
Select Primary Char. Set	ESC c D	ESC c D	ESC c D	---	---
Select Secondary Char. Set	ESC c E	ESC c E	ESC c E	---	---
Define Primary Character Set	ESC c B	ESC c B	ESC c B	---	---
Define Secondary Character Set	ESC c C	ESC c C	ESC c C	---	---
Turn Automatic Font Loading Off	ESC e N	ESC e N	ESC e N	---	---
Turn Automatic Font Loading On	ESC e O	ESC e O	ESC e O	---	---
Load Font Bank with Predefined Char. Set	ESC c @	ESC c @	ESC c @	---	---
Clear Font Bank	ESC c ?	ESC c ?	ESC c ?	---	---
Define and Load a Character	ESC c A	ESC c A	ESC c A	---	---

Programming Functions	A270	A230+	TVI955	TVI950	ADM5
Program Field Terminator	ESC x 0	ESC x 0	ESC x 0	ESC x 0	---
Program Line Terminator	ESC x 1	ESC x 1	ESC x 1	ESC x 1	---
Program Start Prot. Term.	ESC x 2	ESC x 2	ESC x 2	ESC x 2	---
Program End Prot. Term.	ESC x 3	ESC x 3	ESC x 3	ESC x 3	---
Program Page Terminator	ESC x 4	ESC x 4	ESC x 4	ESC x 4	---
Program a Function Key	ESC I	ESC I	ESC I	ESC I	---
Report PFK Free Bytes	---	---	---	---	---
Execute Prog. Func. Key	ESC . A	ESC . A	---	---	---
Program Send Key (Uns)	ESC 0 1	ESC 0 1	ESC 0 1	ESC 0 1	---
Program Send Key (Sh)	ESC 0 2	ESC 0 2	ESC 0 2	ESC 0 2	---
Program One Edit Key	ESC 0	ESC 0	ESC 0	ESC 0	---
Program All Edit Keys	ESC]	ESC]	ESC]	ESC]	---
Enter Function Key Label	---	---	---	---	---
Display Shift Label Line	---	---	---	---	---
Disable Shift Label Line Msg.	---	---	---	---	---
PFK Direction & Def.	---	---	---	---	---
Read Key Direction & Def.	---	---	---	---	---
No Save Function Key Label	---	---	---	---	---
Save Function Key Label	---	---	---	---	---
Program the Answerback Message	---	---	ESC ^	ESC ^	---
Transmit to Host					
Select Host/Aux. as Data/Printer	---	---	---	---	---
Select Aux./Host as Data/Printer	---	---	---	---	---
Configure Host Port	ESC {	ESC {	ESC {	ESC {	---
Select Host Rx. Handshake	---	---	---	---	---
Select Host Tx. Handshake	---	---	---	---	---
Set Max. Data Tx. Speed	---	---	---	---	---
Enable XON/XOFF	CTRL/O	CTRL/O	CTRL/O	CTRL/O	---
Disable XON/XOFF	CTRL/N	CTRL/N	CTRL/N	CTRL/N	---
Return ACKnowledge	---	---	---	---	---
Send Line Unprot.	ESC 4	ESC 4	ESC 4	ESC 4	---
Send Page Unprot.	ESC 5	ESC 5	ESC 5	ESC 5	---
Send Line All	ESC 6	ESC 6	ESC 6	ESC 6	---
Send Page All	ESC 7	ESC 7	ESC 7	ESC 7	---
Send Message Unprot.	ESC S	ESC S	ESC S	ESC S	---
Send Message All	ESC s	ESC s	ESC s	ESC s	---
Send Status Line	ESC Z 1	ESC Z 1	ESC Z 1	ESC Z 1	---
Send User Line 1	ESC Z 0	ESC Z 0	ESC Z 0	ESC Z 0	---
Send User Line 2	ESC Z 2	ESC Z 2	ESC Z 2	ESC Z 2	---
Send Terminal ID	---	---	ESC M	ESC M	---
Send Answerback	ESC M	ESC M	CTRL/E	CTRL/E	CTRL/E
Send Character	---	---	---	---	---

Appendix D

Programming Functions	WY60	WY50+	WY50	VP-A2	VP-A1
Program Field Terminator	---	---	---	---	---
Program Line Terminator	---	---	---	---	---
Program Start Prot. Term.	---	---	---	---	---
Program End Prot. Term.	---	---	---	---	---
Program Page Terminator	---	---	---	---	---
Program a Function Key	ESC z	ESC z	ESC z	ESC z	ESC z
Report PFK Free Bytes	---	---	---	---	---
Execute Prog. Func. Key	---	---	---	---	---
Program Send Key (Uns)	---	---	---	---	---
Program Send Key (Sh)	---	---	---	---	---
Program One Edit Key	---	---	---	ESC c	ESC c
Program All Edit Keys	---	---	---	ESC ^	ESC ^
Enter Function Key Label	ESC z	ESC z	ESC z	ESC z	ESC z
Display Shift Label Line	ESC z P CR	ESC z P CR	ESC z P CR	ESC z P CR	ESC z P CR
Disable Shift Label Line Msg.	ESC z DEL	ESC z DEL	ESC z DEL	ESC z DEL	ESC z DEL
PFK Direction & Def.	ESC Z	ESC Z	ESC Z	---	---
Read Key Direction & Def.	ESC Z ~	ESC Z ~	ESC Z ~	---	---
No Save Function Key Label	ESC e J	ESC e J	ESC e J	---	---
Save Function Key Label	ESC e K	ESC e K	ESC e K	---	---
Program the Answerback Message	---	---	---	---	---

Transmit to Host

Select Host/Aux. as Data/Printer	ESC e 8	ESC e 8	ESC e 8	---	---
Select Aux./Host as Data/Printer	ESC e 9	ESC e 9	ESC e 9	---	---
Configure Host Port	ESC c 0	ESC c 0	ESC c 0	---	---
Select Host Rx. Handshake	ESC c 2	ESC c 2	ESC c 2	---	---
Select Host Tx. Handshake	ESC c 4	ESC c 4	ESC c 4	---	---
Set Max. Data Tx. Speed	ESC c 6	ESC c 6	ESC c 6	---	---
Enable XON/XOFF	---	---	---	---	---
Disable XON/XOFF	---	---	---	---	---
Return ACKnowledge	CTRL/E	CTRL/E	CTRL/E	CTRL/E	CTRL/E
Send Line Unprot.	ESC 4	ESC 4	ESC 4	---	---
Send Page Unprot.	ESC 5	ESC 5	ESC 5	---	---
Send Line All	ESC 6	ESC 6	ESC 6	---	---
Send Page All	ESC 7	ESC 7	ESC 7	ESC 7	ESC 7
Send Message Unprot.	ESC S	ESC S	ESC S	ESC S	ESC S
Send Message All	ESC s	ESC s	ESC s	ESC s	ESC s
Send Status Line	---	---	---	---	---
Send User Line 1	---	---	---	---	---
Send User Line 2	---	---	---	---	---
Send Terminal ID	ESC sp	ESC sp	ESC sp	ESC sp	ESC sp
Send Answerback	---	---	---	---	---
Send Character	ESC M	ESC M	ESC M	---	---

Transmit to Printer	A270	A230+	TVI955	TVI950	ADM5
Configure Aux. Port	ESC }	ESC }	ESC }	ESC }	---
Select Aux. Rx. Handshake	---	---	---	---	---
Select Aux. Tx. Handshake	---	---	---	---	---
Program Print Terminator	---	---	ESC p	ESC p	---
Local Print	ESC P	ESC P	ESC P	ESC P	---
Print Unformatted	ESC L	ESC L	ESC L	ESC L	---
	---	---	---	---	---
Print Unprotected	---	---	---	---	---
Extension Print On	ESC @	ESC @	ESC @	ESC @	CTRL/N(AUX)
Extension Print Off	ESC A	ESC A	ESC A	ESC A	CTRL/O(AUX)
Transparent Print On	ESC `	ESC `	ESC `	ESC `	---
Transparent Print Off	ESC a	ESC a	ESC a	ESC a	---
Bidirectional Print On	CTRL/R	CTRL/R	CTRL/R	CTRL/R	---
Bidirectional Print Off	CTRL/T	CTRL/T	CTRL/T	CTRL/T	---
Turn Aux. Port RX. Mode On	---	---	---	---	---
Turn Aux. Port RX. Mode Off	---	---	---	---	---
Begin Print/Send at TOP	---	---	---	---	---
Begin Print/Send at TOS	---	---	---	---	---
Print Viewport	ESC V N	ESC V N	---	---	---
Print Screen	ESC V M	ESC V M	---	---	---

Transmit to Printer	WY60	WY50+	WY50	VP-A2	VP-A1
Configure Aux. Port	ESC c 1	ESC c 1	ESC c 1	---	---
Select Aux. Rx. Handshake	ESC c 3	ESC c 3	ESC c 3	---	---
Select Aux. Tx. Handshake	ESC c 5	ESC c 5	ESC c 5	---	---
Program Print Terminator	---	---	---	---	---
Local Print	ESC P	ESC P	ESC P	ESC P	ESC P
Print Unformatted	ESC L	ESC L	ESC L	ESC L	ESC L
	ESC p	ESC p	ESC p	ESC p	ESC p
Print Unprotected	ESC @	ESC @	ESC @	ESC @	ESC @
Extension Print On	CTRL/R	CTRL/R	CTRL/R	CTRL/R	CTRL/R
Extension Print Off	CTRL/T	CTRL/T	CTRL/T	CTRL/T	CTRL/T
Transparent Print On	ESC d #	ESC d #	ESC d #	ESC 3	ESC 3
Transparent Print Off	CTRL/T	CTRL/T	CTRL/T	ESC 4	ESC 4
Bidirectional Print On	ESC d %	ESC d %	ESC d %	---	---
Bidirectional Print Off	ESC d $	ESC d $	ESC d $	---	---
Turn Aux. Port RX. Mode On	ESC d !	ESC d !	ESC d !	---	---
Turn Aux. Port RX. Mode Off	ESC d sp	ESC d sp	ESC d sp	---	---
Begin Print/Send at TOP	ESC d '	ESC d '	ESC d '	---	---
Begin Print/Send at TOS	ESC d &	ESC d &	ESC d &	---	---
Print Viewport	---	---	---	---	---
Print Screen	---	---	---	---	---

APPENDIX E
ASCII CODE CHART

				b8	0	0	0	0	0	0	0	0
				b7	0	0	0	0	1	1	1	1
				b6	0	0	1	1	0	0	1	1
				b5	0	1	0	1	0	1	0	1
b4	b3	b2	b1	HEX	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	A	LF	SUB	*	:	J	Z	j	z
1	0	1	1	B	VT	ESC	+	;	K	[	k	{
1	1	0	0	C	FF	FS	,	<	L	\	I	|
1	1	0	1	D	CR	GS	-	=	M	]	m	}
1	1	1	0	E	SO	RS	.	>	N	^	n	~
1	1	1	1	F	SI	US	/	?	O	_	o	DEL

For example,	character	Binary (by bit)	Hexadecimal		Decimal
			Col	Row	
	A	87654321			65
		01000001	4	1	

APPENDIX F

Differences in ASCII Codes
National Character Set

HEX CODE	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
ASCII (App'x E)	#	$	@	[	\	]	^	`	{	|	}	~
Danish	#	$	@	Æ	ø	Å	^	`	æ	ø	å	~
English (U.K.)	£	$	@	[	\	]	^	`	{	|	}	~
French (Azerty)	£	$	à	°	Ç	§	^	`	é	ù	è	¨
German	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
Italian	£	$	§	°	Ç	é	^	ù	à	ò	è	ì
Norwegian	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Spanish	#	$	@	¡	Ñ	¿	^	`	{	ñ	}	~
Swedish	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü

APPENDIX G

ASCII CODES FOR ROW/COLUMN NUMBERS

Certain programming tasks on the terminal, e.g., positioning the cursor, split screen scrolling, require you to identify in ASCII the number of a row and/or column on the screen. The following table lists this correspondence.

NOTE: for the native mode and for A230 plus emulation, when addressing the cursor to row and column (ESC = or ESC -), column numbers above 80 are preceded by the lead-in code: CTRL/Z.

Number (Decimal)	ASCII Character (from table)	In program line
2	!	!
82	!	CTRL/Z!

Decimal	ASCII	Decimal	ASCII	Decimal	ASCII	Decimal	ASCII	Decimal	ASCII
1, 81	(space)	17, 97	0	33, 113	@	49, 129	P	65	`
2, 82	!	18, 98	1	34, 114	A	50, 130	Q	66	a
3, 83	"	19, 99	2	35, 115	B	51, 131	R	67	b
4, 84	#	20, 100	3	36, 116	C	52, 132	S	68	c
5, 85	$	21, 101	4	37, 117	D	53	T	69	d
6, 86	%	22, 102	5	38, 118	E	54	U	70	e
7, 87	&	23, 103	6	39, 119	F	55	V	71	f
8, 88	'	24, 104	7	40, 120	G	56	W	72	g
9, 89	(	25, 105	8	41, 121	H	57	X	73	h
10, 90	)	26, 106	9	42, 122	I	58	Y	74	i
11, 91	*	27, 107	:	43, 123	J	59	Z	75	j
12, 92	+	28, 108	;	44, 124	K	60	[	76	k
13, 93	,	29, 109	<	45, 125	L	61	/	77	l
14, 94	-	30, 110	=	46, 126	M	62	]	78	m
15, 95	.	31, 111	>	47, 127	N	63	^	79	n
16, 96	/	32, 112	?	48, 128	O	64	_	80	o

APPENDIX H
MONITOR MODE SYMBOLS AND CONTROL CODES

Fascimile	ASCII	Hex Code	Description	Generated at Keyboard
N_U	NUL	00	Null	CTRL/@
S_H	SOH	01	Start of Heading	CTRL/A
S_X	STX	02	Start of Text	CTRL/B
E_X	ETX	03	End of Text	CTRL/C
E_T	EOT	04	End of Transmission	CTRL/D
E_Q	ENQ	05	Enquiry	CTRL/E
A_K	ACK	06	Acknowledge	CTRL/F
B_L	BEL	07	Bell (beep)	CTRL/G
B_S	BS	08	Back Space	CTRL/H
H_T	HT	09	Horizontal Tab	CTRL/I
L_F	LF	0A	Line Feed	CTRL/J
V_T	VT	0B	Vertical Tab	CTRL/K
F_F	FF	0C	Form Feed	CTRL/L
C_R	CR	0D	Carriage Return	CTRL/M
S_O	SO	0E	Shift Out	CTRL/N
S_I	SI	0F	Shift In	CTRL/O
D_L	DLE	10	Data Link Escape	CTRL/P
D_1	DC1	11	Device Control 1	CTRL/Q
D_2	DC2	12	Device Control 2	CTRL/R
D_3	DC3	13	Device Control 3	CTRL/S
D_4	DC4	14	Device Control 4	CTRL/T
N_K	NAK	15	Negative Acknowledge	CTRL/U
S_Y	SYN	16	Synchronous Idle	CTRL/V
E_B	ETB	17	End of Transmission Block	CTRL/W
C_N	CAN	18	Cancel	CTRL/X
E_M	EM	19	End of Medium	CTRL/Y
S_B	SUB	1A	Substitute	CTRL/Z
E_C	ESC	1B	Escape	CTRL/[
F_S	FS	1C	File Separator	CTRL/\
G_S	GS	1D	Group Separator	CTRL/]
R_S	RS	1E	Record Separator	CTRL/^
U_S	US	1F	Unit Separator	CTRL/_

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